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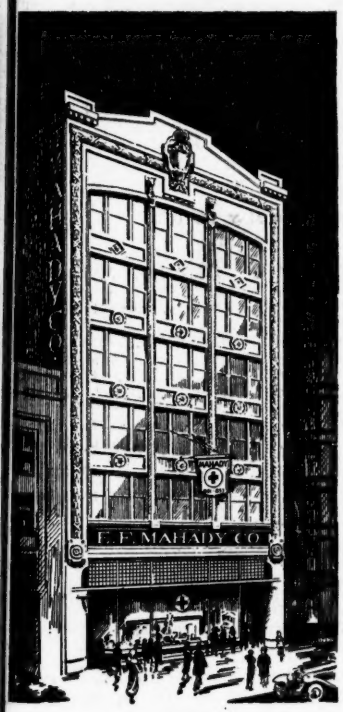

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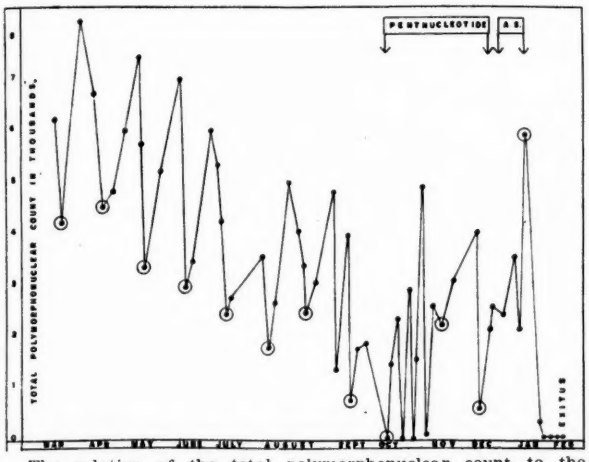
AGRANULOCYTIC ANGINA ASSOCIATED WITH THE MENSTRUAL CYCLE*

BY HENRY JACKSON, JR., M.D.,† AND DUDLEY MERRILL, M.D.† WITH THE ASSISTANCE OF MARION DUANE

THE essential cause of the disease entity known as agranulocytic angina is still unknown. The acute disease is so fulminant that little opportunity is afforded for accurate clinical investigation during the attack. The chronic relapsing cases may be studied more carefully and over a period of time. One most unusual case of this sort was reported by Rutledge, Hansen-Prüss and Thayer in 1930[1], and has only recently been further studied by W. P. Thompson. The results of this latter investigation appear in this number of this *Journal*. The case reported below is of interest in view of Thompson's findings.


PENTNUCLEOTIDE
A S
TOTAL POLYMORPHONUCLEAR COUNT IN THOUSANDS.
DEC APR MAY JUNE JULY AUGUST SEPT OCT NOV DEC JAN FEB
DEATH

The relation of the total polymorphonuclear count to the menstrual cycle in a patient with agranulocytic angina (relapsing). Onset of menstruation indicated by circles around dots. A. S. indicates treatment with antuitrin S.

Mrs. A., a widowed American housewife, 30 years old, was first seen by us on December 17, 1931. She was known to have had four typical attacks of agranulocytic angina in the two preceding years, each attack being characterized by extreme leukopenia and granulopenia and by ulcerations of the mucous membranes of the mouth.

On December 17, 1931 she had another relapse. An account of this and the subsequent attack has already been published[2].

It had been noted by the patient herself early in the course of her illness that all her relapses were initiated very precisely on the first day of her menstrual period and in March, 1932 a study of the peripheral blood picture in relation to the menstrual cycle was begun. A simplified and condensed chart recording the changes found is presented.

It is to be noted that with the onset of each menstrual period the total number of polymorphonuclear neutrophils fell precipitantly, only to rise again rather rapidly to approximately the previous level. This finding has already been referred to[2]. With each catamenia from March, 1932 to January, 1933 the same phenomenon was observed. At no time, however, was the patient acutely ill until on October 22, 1932 when menstruation started and an actual attack of agranulocytic angina was initiated. Both clinical and hematological improvement followed Pentnucleotide (N.N.R.) therapy, but a marked and refractory upper respiratory infection set in. To this infection can be attributed, we believe, the fluctuation of the peripheral white blood cell counts during the succeeding weeks when she was under rather intensive Pentnucleotide therapy.

An extreme drop in total polymorphonuclear neutrophils occurred again on November 17, 1932, the date on which her next period was expected. This, however, for no known reason was delayed five days and, when menstruation actually began, no drop in polymorphonuclear neutrophils occurred.

Again it is to be particularly noted, as the chart shows, that with some regularity the total polymorphonuclear neutrophils fell to a lower level with each successive menstrual period and their subsequent recovery was to a less satisfactory height. The exact significance of this is not clear but it may be compared with a similar decline in the red cell level in pernicious anemia before the days of liver therapy. The course taken by the leukocytes may indicate, however, that two factors are at work; one slowly progressive and fundamental, the other related to the menstrual cycle and periodically aggravating the first. This gradual fall in general polymorphonuclear level led us to believe that unless some remedy was found that would prevent the fall the eventual outcome would be fatal in this particular case. For ten days prior to the catamenia, due on December 21, 1932, she was given daily 10 cc. of Pentnucleotide intramuscularly. The number of polymorphonuclear neutrophils under this treatment rose from 2200 to 4500 per c.mm., but with the onset of menstruation fell suddenly to 500 per c.mm. Thus while the general level of the white blood cells had apparently been raised by Pentnucleotide therapy and the tendency to fall lower with each succeeding catamenia had been lessened, yet the fall was not completely prevented.

In view of the apparent relationship between the menstrual cycle and the number of white blood cells it was decided to try Antuitrin S. (Parke, Davis and Company) prior to the next menstrual period and 2 cc. of this material were administered daily for ten days prior to the catamenia of January, 1933. For the first time in eleven months there was a sharp rise in total polymorphonuclear neutrophils the first day of the menstruation and they reached a level which was higher than at any time during the preceding seven months. Fourteen days later the pa-

*From the Thorndike Memorial Laboratory, Second and Fourth Medical Services (Harvard), Boston City Hospital and The Department of Medicine, Harvard University.

†Jackson—Assistant Professor of Medicine, Harvard Medical School. Merrill—Assistant in Medicine, Harvard Medical School. Duane—Blood Technician, Thorndike Memorial Laboratory, Boston City Hospital. For records and addresses of authors see "This Week's Issue," page 225.

tient caught a severe "cold in the head" and after a dietary indiscretion had diarrhea, nausea and vomiting. Her white blood cells at that time were 3000 per c.mm. with 28 per cent polymorphonuclear neutrophils. The white blood cell count and percentage of polymorphonuclear neutrophils gradually fell. The upper respiratory infection progressed and a severe cellulitis of the buttock developed. All medication other than symptomatic was refused. The patient died February 16, 1933 at approximately the time the next catamenia should have appeared.

No definite conclusions have been drawn from this case. It would appear, however, that at least in some instances of relapsing agranulocytic angina there is a definite temporal relation between the menstrual cycle and the intensity of the leukopenia. That the relationship is not always constant is attested to by such cases as have been described by Doan[3], but we have been increasingly impressed by the number of cases of agranulocytic angina in which the attacks occur at or about the time of the menstrual period and it should be noted that over 80 per cent of the cases are in females. Thompson's observations appear to indicate that a similar mechanism may be at work when the disease occurs in males.

At the time Mrs. A. was being studied no determinations were made of the sex hormones, largely because of the inadequate methods available at the time. Such studies are, however, now being made on other cases with the hope that they may help to elucidate the nature of this baffling condition.

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OBSERVATIONS ON THE POSSIBLE RELATION BETWEEN AGRANULOCYTOSIS AND MENSTRUATION WITH FURTHER STUDIES ON A CASE OF CYCLIC NEUTROPENIA*

BY W. P. THOMPSON, M.D.†

IT now seems fairly certain that, in a vast majority of cases of agranulocytosis, the primary disturbance takes place in the bone marrow; that cessation of myeloid growth at the myelocytic level precedes, rather than follows, other evidence of this disease.

It is, therefore, of interest to inquire into possible factors that might be in any way associated with this disturbance. With this in view, patients with agranulocytosis have been questioned at length with respect to their habits, diet, contact with drugs or poisons, or any recent change of any kind in their general mode of living. No common factor has been found.

However, a recent review of the forty cases of agranulocytosis that have been studied in this clinic suggested a possible temporal correlation between the onset of the neutropenia and the onset of menstruation.

The predominance of the condition in women is known, and of our forty cases only five were males.

Of the thirty-five women with agranulocytosis, twenty-five were less than forty-five years old; that is, within the menstrual age. In three of these twenty-five cases the histories are incomplete. Two patients had had a previous artificial menopause and in two the neutropenia appeared with endometritis following abortion. In seventeen of the remaining eighteen cases the onset of the subjective symptoms of agranulocytosis occurred within one or two days of the onset of the regular menstrual period and all of these seventeen patients were menstruating at the time of admission to the hospital.

In addition, one or more recurrences of the

TABLE 1

Patient No. 1			Patient No. 2		
Date 1933	White Blood Cells	Per Cent Neutrophiles	Date 1933	White Blood Cells	Per Cent Neutrophiles
July			July		
6	3,600	52	10	7,800	65
7	3,500	35	12	7,300	69
8	3,900	29	13	7,800	63
10	4,700	53	17	3,700	36
11	4,000	47	18	3,400	44
12	5,700*	38*	19	4,700	46
13	6,000	43	20	5,700	57
14	6,500	57	21	5,100	45
15	10,200	43	22	7,200	58
17	6,700	52	24	7,100	57
18	5,900	43	26	9,700	61
19	5,300	61	27	8,600	57
20	4,100	56	29	6,600	76
21	6,300	48	31	1,500	28
24	5,300	62			
			Aug.		
			1	2,700	22
			2	3,300	25
			4	5,800*	54*
			5	5,000	61
			7	8,000	66

*Onset of Catamenia.

The total white blood cell count and percentage of polymorphonuclear neutrophiles in two patients shortly before and during a menstrual period who had at this time no symptoms but who had previously had attacks of agranulocytic angina.

*From the Department of Medicine, College of Physicians and Surgeons, Columbia University, and the Presbyterian Hospital, New York City.

†Thompson—Assistant Physician, Presbyterian Hospital, New York City. For record and address of author see "This Week's Issue," page 225.

agranulocytosis were observed in six of this group of eighteen cases and each recurrence in each individual appeared coincident with catamenia.

Two young women who had recovered from previous attacks of typical agranulocytic angina were followed, with frequent blood cell counts, through a menstrual period. The white blood cell counts and percentage of neutrophiles are recorded in table 1. It appears that in these two individuals a definite neutropenia occurred four or five days before the onset of catamenia; this neutropenia was without subjective symptoms of any kind.

Additional information was obtained from study of a young male patient with cyclic agranulocytosis. This individual, who is now twenty-five years old, has been carefully followed throughout his entire existence. He has been seen by many men, in many clinics, and the almost unbelievable regularity of the neutropenic episodes has already been the subject of two communications. His early history is available in the report of his pediatrician[1]. The subsequent course and studies have been brought up to 1929 by Rutledge, Hansen-Prüss and Thayer[2]. Since 1929 he has been under the care of Drs. Garnett Cheney and Arthur Bloomfield of San Francisco who referred the patient to Dr. Norton S. Brown of New York with data on the 1929-1933 period.

It is therefore known that from the age of two and a half months to the present time the patient has had a cyclic neutropenia, that each cycle is identical with previous episodes, and that the complete cycle occupies a total duration of twenty-one days. A detailed clinical and hematological report of these cycles is available in the 1930 report[2].

Since 1930 there has been no change in the periodicity of the attacks, they continue to occur at three week intervals, and it is still possible, by doing a white blood cell count on any given day to predict, with startling accuracy, that an identical count will be found twenty-one days later.

Two additional observations of interest have been made by Dr. Cheney[4]. First, the patient has developed, within the last two years, a true diabetes insipidus that responds promptly to injections of posterior pituitary extract. Secondly, that injection of Pentnucleotide (N.N.R.) is capable of partially aborting the next scheduled episode. It now seems quite clear that in this patient, the fall in granulocytes definitely precedes the onset of fever, buccal necrosis and other symptoms, and that if the extreme neutropenia of an impending attack is prevented with nucleotide, no subjective symptoms whatever will occur. This is excellent evidence that the primary disturbance lies in the control of granulocyte production.

The regularity of the attacks, the presence of diabetes insipidus together with the obvious and previously noted[2] physical and emotional evidence of endocrine imbalance suggested that a study of hormone excretion in relation to the white cell counts might be of interest. The patient was, therefore, admitted for study under the direction of Drs. Raphael Kurzrok and Norton S. Brown, to whom I am greatly indebted.

At the time of admission the patient was just starting the phase of progressive neutropenia, the height of the attack being still a week ahead. It was decided to observe the attack without instituting nucleotide therapy and to follow the course with daily blood cell counts, daily determinations of gonadotropic hormone (prolan) in the urine and frequent estimations of the urinary excretion of female sex hormone. In addition, many basal metabolic rate determinations were done, all of which fell within normal limits. He was given a normal diet, was allowed to be up and about, the fluid intake and output were measured together with the usual routine hospital procedures.

TABLE 2

Date 1933	Female Sex Hormone in Urine	Prolan in Urine	White Blood Cells	Per Cent of Neutrophiles
	Rat Units			
May				
23	34-68	—	3,000	42
24		0	3,300	22
25	?	0	3,700	11
26		0	3,700	12
27	81-162	0	3,000	12
28	72	0	2,800	3
29	0	Slight	3,200	5
30	0	Slight	2,200	1
31	—	—	3,300	2
June				
1	—	—	3,800	3
2	76	Slight	4,700	3
3		0	4,300	3
4	92	0	3,600	6
5		0	4,300	6
6	116	0	5,500	21
7		0	6,200	
8		0	5,400	54*
9			6,800	
10				
11				
12				
13				
14				
15				

*Operation.

The total white blood cell count and percentage of neutrophiles in relation to the urinary excretion of female sex hormone and prolan, during the neutropenic phase of a case of cyclic agranulocytosis.

The more significant data are shown in table 2 and are plotted in the chart. It is regrettable that a more complete study was not possible, but the patient has never been very coöperative[1, 2]. The absence of female sex hormone

on May 25th and May 26th was checked, but a delay had occurred in the delivery of the specimen. No determination could be made on May 31st and June 1st. The figures should otherwise be correct up to June 9th when the patient was circumcised, at his request. Following this

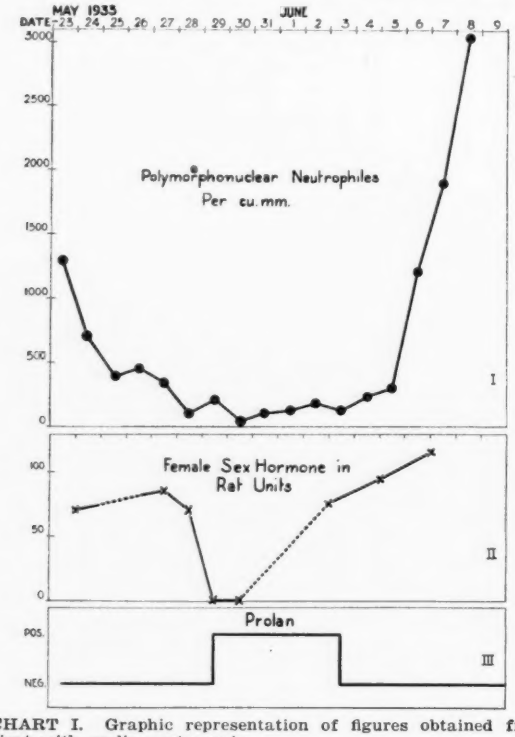

CHART I. Graphic representation of figures obtained from patient with cyclic neutropenia.

operation considerable difficulty was experienced and, as another attack of neutropenia was on its way, it was decided to conclude the observations and start Pentnucleotide.

The data do seem to show, however, several interesting points.

In the first place, this man excretes at times, an enormous amount of female sex hormone.

In the second place, there is an apparent fluctuation in the ovarian hormone that closely follows figures obtained by Frank and Goldberger[3] for the fluctuation of these hormones in the blood of normal menstruating women. Catamenia apparently takes place in normal women immediately after a drop in female sex hormone excretion and coincides with the appearance in the urine of small amounts of gonadotropic hormone (prolan).

It seems likely therefore, that this male patient is experiencing cyclic hormonal fluctuations that are similar to the hormonal menstrual cycles of women.

The curve of the daily number of circulating neutrophilic leucocytes follows rather closely the curve of female sex hormone excretion. And it is of considerable interest that the height of the neutropenic attack should coincide with what might be called his hormonal catamenia.

SUMMARY

1. In seventeen out of eighteen young women with agranulocytic angina, the onset of subjective symptoms occurred within a day or two of the onset of the regular menstrual period and all seventeen were menstruating at the time of admission to the hospital.

2. One or more recurrences of agranulocytosis were observed in six of these eighteen patients and each recurrence in each individual coincided with the onset of catamenia.

3. Two young women, who had had previous attacks of agranulocytic angina were followed through a menstrual period. In both a distinct but transient neutropenia developed, without symptoms, just before the onset of catamenia.

4. The excretion of female sex and gonadotropic hormones was followed during the neutropenic phase of a well-known and previously reported case of cyclic agranulocytosis. The results suggest that neutropenia occurs, in this young man, at the time of hormonal catamenia.

CONCLUSIONS

From these observations, together with the studies of Jackson (published in this same issue), it seems possible that, in some cases of agranulocytosis, a relationship exists between the hormones associated with menstruation and the neutropenic episodes. Further studies on this possible relationship are now being undertaken.

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MECHANICS AND REDUCTION OF DISPLACED UPPER FEMORAL EPIPHYSIS

BY JOHN D. ADAMS, M.D.*

THE end results of displaced femoral epiphyses, whether by closed or open method of reduction, have on the whole been rather unsatisfactory. This fact holds true whatever the cause of displacement, viz., trauma, endocrine disturbance or acute infection. The surgeon has been misled in the x-ray interpretation of his end result. The treatment of the hip joint, representing a very high percentage of joint injuries, has been questionable. It has been the only important anatomical bony structure susceptible to disease and injury that we have not demanded a two plane attack from the x-ray. The operator has never been sure of his anatomical repo-

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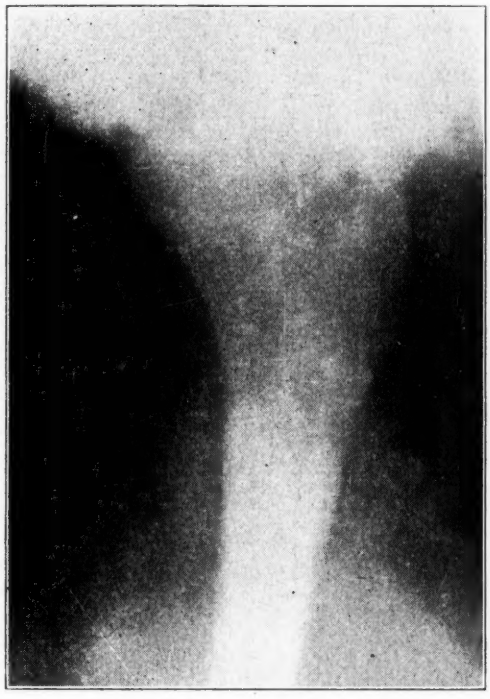
sition until the recent introduction of the vertical view of the hip joint by Drs. George and Leonard of Boston. This work is a distinct contribution to hip joint surgery and in a convincing manner exposes our failures of the past and gives us a reasonably sure test for any manipulative method employed for reduction of intracapsular fractures of the neck of the femur or separation of femoral epiphyses. It is an accepted fact that the displacement of the epiphysis takes place at the diaphyseal side of the epiphyseal line. The leg is in extreme internal rotation and adduction, posterior to the plane of the other leg, when the separation takes place. There then occurs a simple act of torsion in which there is leverage of the epiphysis against the inferior aspect of the acetabulum, the pelvis being twisted against this resistance in such a way as to cause the displacement. The position of the neck of the femur after the displacement has occurred is always anterior to the epiphysis, thus forcing the leg into strong eversion or external rotation. The mechanics are precisely the same as occur in intracapsular fractures of the neck of the femur, the displacement of the fragments, however, being caused by an actual impact of the hip against the ground or floor.

Treatment: It is the writer's opinion that reduction of epiphyses should be done as soon after the displacement as is possible. The diagnosis should always be made by anterior-posterior and vertical views. Under a suitable anesthesia, the operator flexes the knee with the femur still in external rotation. The leg is raised with the arm of the operator under the knee, which is flexed, the lower leg lying against the body of the operator. Traction against resistance by an assistant holding the pelvis is then applied with the hip flexed. The leg is next carried into adduction and by a process of circumduction from this position, namely lifting the upper leg with traction and rotating in a circle from adduction to extreme abduction, the leg may then be readily internally rotated and thus engage the slipped epiphysis. It will be readily noted that only with the leg in extreme abduction is it impossible to internally rotate the femur. At this point the x-ray check-up should be made from both views. The leg is then brought down with the knee fully extended so that the medial aspect of the foot lies flat and abduction of the leg to the extent of forty-five to fifty degrees maintained. Plaster boots are then applied to the lower leg, being carried up to the tubercle of the tibia on both legs. A stick is then applied between the two plaster boots incorporating the ends of the stick in plaster.



FIGURES 1 and 2. X-rays taken immediately after the injury. Note the anterior-posterior and lateral views showing clearly the neck, anterior to the slipped epiphysis.

HISTORY OF CASE: G. B. G. Aged 12. Mother states boy has always been overweight for his age. He never has had any previous injuries to this hip. About two years ago he had scarlet fever and had some pain at that time in the hip joints as a complication but never any sign of infection.

Present symptoms: About forty-eight hours ago patient fell while roller skating, striking on left side. He was seen by Dr. Stratton of Melrose who sent him to the Hospital and x-rays were taken. Figures 1 and 2.

Examination: This boy borders on the hypopituitary type; the left leg is held in marked eversion and external rotation, typical position of either intra-

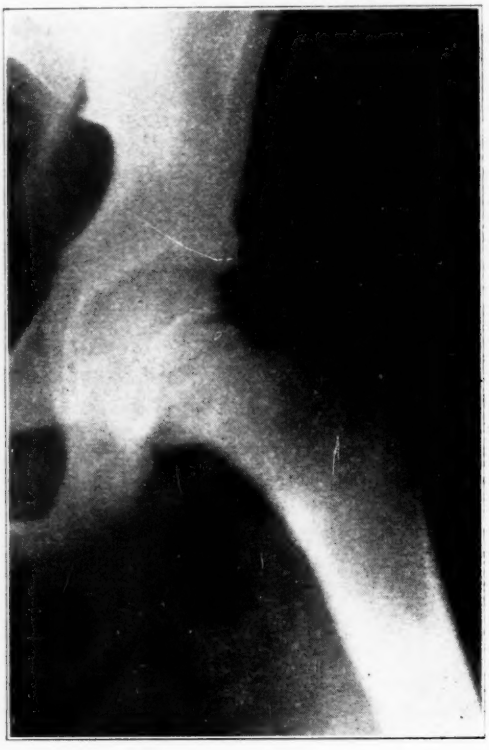
capsular fracture of the neck of the femur or a slipped epiphysis.

Under ether: Leg was manipulated as described and in carrying the leg to extreme abduction one could readily rotate the femur internally without the slightest resistance. Plaster boots were applied and the leg put up in about forty-five degrees of abduction.

Postmanipulative x-ray check-up: Figures 3 and 4 —note the perfect reposition of the epiphysis as checked by the vertical view. Boy was kept in apparatus for ten weeks.

Final check-up: Eight months after injury boy reports stating he has absolutely no pain and no subjective symptoms whatever. He cannot cross the left leg so well as he could before the accident but this is steadily improving. He cannot tie his shoes so well as he could before but this too is gradually improving.

Examination: Patient walks without a limp; legs measure the same in length; abduction and flexion is limited to two-thirds normal; patient is able to cross the legs in a sitting position; hyperextension is slightly limited.



FIGURES 3 and 4. Representing views taken after the reduction.

In the writer's experience of six cases of slipped epiphysis this is the first satisfactory result from either closed or open reduction. The writer also feels that had we had the advantage of the vertical view in the past, that many of the cases of intracapsular fractures of the neck of the femur, treated by the Whitman technique would have shown far better end results. The plaster boot method was first described by Wilke but in his original description he does not accentuate internal rotation. This method of treatment simplifies the nursing care of the patient throughout convalescence. With the leg internally rotated and abducted and the knee in full extension it is possible to roll the patient over and care for the skin of the buttocks, also to take frequent x-rays without the complication of a plaster spica. The patient may be sat up at an angle of forty-five degrees. From the testimony of six cases of intracapsular fractures of the neck of the femur which the writer has treated by this method, one is convinced that from the standpoint of comfort it is a distinct advantage over other methods of treatment.

SUMMARY: First—Separation of upper femoral epiphysis should be reduced as soon as possible after the slipping has occurred.

Secondly—The above method in the opinion of the writer produces a minimum amount of trauma to this all-important structure.

Thirdly—The ability for a frequent and conclusive x-ray check-up by both anterior-posterior and vertical views visualizes the exact position and condition of the bony structure as we have never heretofore been able to accomplish.

Fourthly—The comfort of the patient and the ease of hospital care have proved to be a very great factor in the acceptance of this method of treatment.

REFERENCE

1 Leonard, R. D. and George, A. W.: Cassette with convex curve. Am. J. Roentgenol. 28:261, 1932.

JAUNDICE IN ARTHRITIS: ITS ANALGESIC ACTION*

Report of 4 Cases

BY NATHAN SIDEL, M.D.,† AND MAURICE I. ABRAMS, M.D.†

THIS is a report of four patients with infectious (rheumatoid or atrophic) arthritis who experienced striking relief of all joint symptoms with the onset of jaundice. In all cases, the peak of jaundice was reached in several days, after the onset, followed by a steady diminution in the icteric index; a normal level being reached in three to six weeks. In all four cases, joint pain had been constantly present for at least several months and was abruptly terminated with the development of jaundice. In addition to the relief of pain, one patient with swelling, stiffness, and redness of the joints had marked improvement of these signs as well. In no case did any joint pains reappear until after the jaundice had subsided; in one case there has been no recurrence of joint symptoms for over two years; in the other three cases, the joint pains were considerably attenuated when they did recur.

CASE REPORTS

CASE No. 1. I. R., a married white male, aged 39 years, came to the out-patient department on January 5, 1933, complaining of joint pains of five years' duration. His elbows, fingers, spine, hips, knees, and hands had all been involved in various degrees. Typhoid inoculations, sulphur baths, eradication of all possible foci of infection, and energetic treatment from a chiropractor had all failed to afford him any relief. Generalized psoriasis had been present as long as his joint pains, and to a slight degree for several months before the onset of arthritis.

Physical examination revealed redness and swelling of the right metacarpal and right proximal interphalangeal joints. There was definite deformity of the fingers of both hands. Generalized psoriasis was present.

Clinical Course: Around April 1, 1933, he noted complete freedom of joint pains for the first time in many months. A few days later his skin and sclerae were definitely yellow. He was admitted to the medical ward on April 6, 1933, and remained in the hospital for 24 days. During this period, his only symptoms were malaise, nausea, weakness and vomiting; at no time was there any joint discomfort. The redness and swelling of the involved fingers were distinctly lessened. Following his discharge from the hospital he remained free of all joint pains for several weeks; then there was recurrence of pain, but much milder than at any time in the past five years.

Diagnoses: Infectious Arthritis (Psoriatic Type);
Infectious Hepatitis (Catarrhal Jaundice)

CASE No. 2. E. B., a married white female, aged 47 years, came to the out-patient department on January 12, 1931, complaining of pains in both hands, fingers, feet, elbows and shoulders, of three years' duration. On February 16, 1931, oxyl-iodide, two capsules* daily, was prescribed. After two weeks she stopped taking the medicine because of the onset of itching of the palms, feet and scalp. Soon thereafter, she noted a diminished appetite, nausea and heartburn, but her joint pains disappeared completely. On March 26, 1931, she was admitted to the medical ward for treatment of jaundice.

Clinical Course: The patient remained in the hospital for 20 days. Her liver which was enlarged to four fingerbreadths below the costal margin, gradually receded, until at the time of discharge it was only barely palpable. The icteric index fell from an admission level of 132 to 25 at the time of discharge. Her jaundice gradually lessened until at the time of discharge there was only a slight icteric tint. She was comfortable and free of pain at the time of discharge, and remained so until April, 1933, when there was, for the first time since her attack of jaundice two years previously, a recurrence of her joint pains. However, she noted that her joint pain was much less intense than previous to her attack of jaundice.

Diagnoses: Infectious Arthritis;
Toxic Hepatitis (Oxyl-iodide)

CASE No. 3. I. L., a married white male, aged 38 years, entered the ward, September 29, 1931, complaining of rapidly progressive jaundice with anorexia of one week's duration. For three months previous to the onset of jaundice, he had suffered from severe pains in his knees, spine, and in all the joints of his upper extremities, but these pains disappeared completely when jaundice commenced.

Clinical Course: The patient remained in the hospital for 24 days, during which time he was fairly comfortable, gradually regained his appetite, and steadily became less jaundiced. His icteric index on admission was 55 and fell to 12 by the time of discharge. Throughout his hospital stay he was absolutely free of any joint pains. Following the complete disappearance of his jaundice, he once again began to suffer from joint pains, considerably less severe than formerly.

Diagnoses: Infectious Arthritis;
Infectious Hepatitis (Catarrhal Jaundice)

CASE No. 4. C. L., a white housewife, aged 49 years, was seen for the first time in the out-patient department on April 14, 1931, complaining of painless jaundice of five weeks' duration. Three months previously she had commenced suffering from pain in her left ankle, almost constant and severe enough to cause her to take to bed. After a few weeks of this pain, she was given atophan, 36 to 48 tablets, and then, 24 capsules of oxyl-iodide. Shortly thereafter she noted itching of her entire body, and jaundice. At the same time she experienced complete relief of her joint pains.

Clinical Course: The patient was admitted to the ward and remained there for approximately three weeks. Throughout this period she was rendered quite uncomfortable by itching of the skin, nausea, and intense jaundice, but at no time did she have the slightest degree of pain in her left ankle. The jaundice gradually cleared and she was discharged symptom-free. Two years later, the patient

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*One capsule oxyl-iodide contains 0.2 Gm. of phenylcinchoninic acid.

was enjoying good health and stated that she had had no joint pain since her attack of jaundice.

Diagnoses: Infectious Arthritis.

COMMENT

These four patients have made recent visits to the Arthritic Clinic and each one, without prompting, readily volunteered the information that his joint pains had disappeared "as if by magic" at the first sign of jaundice. The patients' own insistence on this fact, together with the histories of prolonged joint involvement that had withstood certain therapeutic measures, make it likely that the alleviation of joint pain was related to the jaundiced state. The dramatic relief of pain that had tormented Case No. 1 for five years until the onset of jaundice certainly suggests something more than coincidence.

It seemed that a study of the case histories reported in the voluminous literature on cinchophen poisoning would aid in determining whether it had been observed that jaundice had an analgesic effect on joint pain. From this point of view, the case histories in the reports on cinchophen poisoning are indefinite. In most instances, no reference is made to joint pain; in some cases, vague pains are described. However, from the fact that joint pains have not been mentioned as being present, and since in practically all instances cinchophen had been administered for the relief of joint pains, it is reasonable to conclude that once the jaundice of cinchophen poisoning had become manifest, the joint pains disappeared. For when every symptom, such as nausea, gas, distress, and abdominal pain are mentioned, as they frequently are in these cases, it seems fair to conclude that joint pain would also have been reported if it were present.

Of the four cases, two patients had infectious hepatitis (catarrhal jaundice) and two patients had toxic hepatitis. From this it would appear that the jaundice per se and not the exciting cause of the jaundice has afforded relief. This is in harmony with the findings of Hench[1] who has collected about twenty cases of chronic arthritis complicated by various disorders leading to jaundice in which relief of the joint pains has occurred in association with jaundice.

What constituent of the jaundiced state is the effective analgesic agent in arthritis is so far undetermined. An excess in circulating bilirubin, as well as an increased amount of bile salts, is present and which of these two factors is the more significant awaits further investigation. We have so far given bile salts in large doses to several patients with infectious arthritis, and although the results have been gratifying, we hesitate to place undue weight upon them.

SUMMARY

Four patients presenting jaundice in chronic arthritis are reported.

Marked relief of the joint pain occurred suddenly with the onset of jaundice in each case.

The arthritic pain either remained absent or recurred with much lessened severity with the subsidence of the jaundice.

The abnormal factors present in the jaundiced state are being investigated as to their therapeutic effect in infectious arthritis. Bile salts administration in several cases of infectious arthritis has been attended with clinical improvement.

REFERENCE

1 Hench, P. S.: Analgesia accompanying hepatitis and jaundice in cases of chronic arthritis, fibrositis and sciatic pain. Proc. Staff Meet. Mayo Clinic. 8:430, 1933.

THE GEORGE W. GAY LECTURE ON MEDICAL ETHICS*

The Theology of Medicine

BY ROBERT B. OSGOOD, M.D.†

SIR James Barrie has quaintly confessed to the possession of a dual personality. This constant companion was named McConnachie, and whenever Sir James wished to be serious, McConnachie threatened to turn him into a casual, fanciful person, though a very charming one.

I fear there must have been a stern religious ancestor who is responsible for an alter ego of whom I am sometimes conscious. He is, alas, not entertaining like McConnachie, but a sort of Cotton Mather, who when I would be light, trips me into preaching a sermon. It was this Mather person who insisted upon the title of this discourse. I have attempted to elude him and to squelch him, but have not been entirely successful, and I feel it only fair for you to realize the handicap under which the part of me that is supposed to deliver this lecture has been laboring.

Theology literally means the science of religion and morals. Religion is an attitude; morals to some extent may be codified. The worst of it is that I have a notion that Mather may not have been entirely wrong when he persuaded me that the attitude which physicians assume is as important as the code of ethics under which they practise.

It is fortunate that the founder of these Harvard Lectures on the subject of Medical Ethics,

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which may perhaps be called The Theology of Medicine, should have been not only a priest of Asklépios, but should have exemplified by his life the religion he taught.

Dr. George W. Gay, born in 1842 and dying in 1931, traveled on that stretch of medical road which emerged from the obscuring woods of ignorance of cellular pathology, biological chemistry and the causes of infection, into the more open country cleared by Virchow, Pasteur, Lister and Roentgen.

With a proud ancestral line, humbly born and frugally educated, he struggled against the handicaps that challenged him, shook off the chains that bound him, and strong and free, acquired wisdom and skill in medicine and surgery. As a useful citizen, a beloved physician, a respected and honored colleague, he added prestige to his profession and benignly influenced the medical life of this community. With the modest bearing of really great characters, he served with distinction the Boston City Hospital as chief of its surgical staff and the Massachusetts Medical Society as its president.

Dr. Gay's bequest for lectures on Medical Ethics is in complete consonance with his character. I remember him as an able surgeon, an efficient executive, an inspiring teacher. When I think of him, however, I find that it is the gentleness of his nature and his high standards of conduct which have left the deepest impression.

Finances. In his letter to the Corporation of Harvard University, Dr. Gay expressly requested that the lectures given under his will should be concerned with the finances of the physician as well as with the general topic of Medical Ethics. He desired that both fees and investments should be discussed. In order to conform with his wishes, these subjects will be touched upon at the outset so that we may have done as quickly as possible with the less pleasant matter of the wherewithal and be able to discuss more leisurely the questions of the how-with-all and the why-with-all. This year, for the first time, the comprehensive findings of the Committee on The Costs of Medical Care have put into our possession reliable facts as to where go the three and a half billions of dollars which are annually spent in the United States for medical care. If we consider the medical dollar as a unit, we learn that about thirty cents of this dollar enter the pockets of the practising physician directly; that about twenty cents are spent for hospital care; that twelve cents go to the dentists; that only five to six cents are allocated to the National and State Public Health Services and that nearly as much money as the practitioners of medicine receive themselves is spent for medicines alone, about half of which is probably squandered on worthless patented remedies (with a question mark) bought without doctors' prescriptions.

Three and a half billions of dollars is a large sum, but when we find that the amount of money which the American public spends for entertainments, chewing gum, candy, cosmetics, etc., is four times as great, it suggests that there has been plenty of extra cash in the pockets of our citizens and that perhaps we should fare better as a nation if *more* rather than less money should be spent in the quest of health and *less* rather than more in the quest of pleasure.

It may be well to remind you that the average annual income of physicians is under four thousand dollars a year and that of dentists nearly a thousand dollars more, while the medical overhead eats up nearly a third of the doctors' receipts. You are evidently not entering (in terms of American slang) a "get-rich-quick" profession.

These facts, however, will hardly deter the right thinking man from choosing a medical career. The college professor has already learned to view with complacency the greater financial return of his plumber and painter and perhaps even of his "butcher, his baker and his candlestick maker" (who is the modern electrician). He realizes that he is happier in a profession where "Toil unsevered from tranquillity" is possible, than in a trade whose motto is, "The devil take the hinder-most." Perhaps we may look forward confidently to a time when an aristocracy of brains and service will command more respect from the general public than an aristocracy of smartness and purchasing power. Be this as it may, we must all recognize that there must be an irreducible minimum of income in excess of expenses for the practising physician, if he is to hold his head high enough to see over the always present clouds of food and clothing and education for himself and for his family. Nevertheless, the various schemes of voluntary or compulsory health insurance that are now being discussed and, to a small extent, actually tried in this country, are the inevitable response to a very real need of great masses of our people for adequate medical service which under present conditions they lack. Sickness that can never be predicted is still for too many people nothing less than a financial catastrophe. As Dr. Olin West, Director General of the American Medical Association, has said, "The one outstanding problem for the medical profession today is the delivery of adequate scientific medical service to all the people, rich and poor, at a cost which can be reasonably met by them in their respective stations in life."

I would impress upon you the wisdom of taking an acute interest in these monetary problems of the public and of the medical profession, for some type of voluntary or compulsory health insurance is already in force in almost every important country in the world except in the United States. The hand is writing on the wall, and organized medicine ought to guide

the pen that this hand holds. Votes, not medical men, make laws that intimately concern both the physician and his patients. There must be a fairly general consensus among the profession, if medical men are to influence legislation that intimately concerns the good of their charges and their own ability to serve their patients with dignity and efficiency. Prevention of unnecessary illness does not appear to have been attained by any of the types of health insurance in force in the European countries; yet this goal is set and we must strive to reach it. After a sufficient period of trial, experience may be expected to blaze a trail leading to the ideal sought. It is already quite evident that in those countries where organized medicine has actively interested itself in these serious problems and has been able to influence legislation, the lot of both the general practitioner and his patients has been vastly better than in those countries where uninformed, though often well meaning, lay legislators have shaped and passed laws dealing with the health of the public and affecting both the type of service and the monetary reward of those entrusted with its maintenance. The practice of medicine is not a business. To those of us who love it, it must never become one. If it ever does, it will fail to attract that type of disciple who will be true to his Master. The holding of money-bags is ever fraught with temptation. It is worth while to ponder the old Basque saying, "With little we have but peace: It is enough."

Fees. We are faced with the question of fees. Most of us would be happier and, I fancy, wealthier if we had business agents to settle these questions for us. Many physicians in group practice enjoy the luxury of not knowing how much or how little a given patient has paid, or is expected to pay, for the medical care he is receiving. I am old-fashioned enough to believe, however, that it is important, almost a duty, for the physician to carry personally the burden of knowing enough of the financial condition of his patient to be enabled to estimate how much of a load of mental anxiety he is *adding*, while he strives to *take away* the load of physical discomfort.

"In nature there's no blemish but the mind: None can be called deformed but the unkind." The business secretaries of physicians or the financial agents of groups must be rare persons indeed if they are not more influenced by loyalty to their employers (a sometimes mistaken loyalty) than to the financial exigencies of the person seeking bodily relief. I have used the words, "sometimes mistaken loyalty" advisedly, because the longer we practice, the more fixed becomes our conviction that immediate successful results of treatment, even operative treatment, and satisfactory convalescence, are always inhibited by anxiety and are always favored by peace of mind. The highest type of physician is something more than an artisan hired to do a job, or even an architect employed to draw up specifications for a house of health. He should also be available as a confidential family lawyer and as a priest to hear confessions. Few sensitive patients enjoy disclosing the contents of the family chest to a strange man or woman whom they may never see again. Pride, false if you will, but strong, turns the key that locks the door on many a family skeleton and the lid on many a family chest.

Standardization of Fees. Standardization of physicians' fees has often been suggested. In our opinion any general effort of this sort would be most unwise if that priceless personal relation between patient and physician that to a large extent now obtains is to be retained. Results cannot by and large be guaranteed or paid for on such a basis. Results depend quite as much upon the personality and condition of the patient with a given complaint, as upon the knowledge and skill of the physician, and this knowledge and skill and wisdom, as we know, varies enormously, in both degree and in kind, among practitioners of the healing art. Our sense of responsibility is increased when we reflect upon the very general trust which continues to be accorded to doctors by the body politic. It is a remarkable tribute to the square dealing of medical men, that the public with very little protest allows us to go on setting our own standards of conduct and trying to collect whatever we ourselves consider to be fair recompense of such conduct. There must have been very few buccaneers among the medical navigators of the past. It is our duty to see that there be very few in the present or in the future. There exist those who grossly abuse these privileges. They should be compelled by medical opinion, and if necessary, by medical action, to conform to the somewhat *varied* but none the less *rigid* rules of the game. If they are not so compelled, public opinion will surely demand that the many innocent must suffer for the few guilty.

Disclaiming any belief that the method of estimating the proper fee to be charged a patient, which I have followed for many years, is the only or even the best way, I shall describe it in outline because I have found it satisfactory to both patient and physician when the contemplated fee may be considerable and when I have no means of knowing the financial standing of the patient.

The first step is the obtaining of the patient's history by an unhurried and often lengthy interview at which only the patient and his chief medical adviser are present. The confidence of the patient which it is so essential to gain as early

as possible is most likely to be initiated at this first contact. We must view the patient with "the eyes of those who do not hesitate or compute, not questioning or appraising but unafraid and mild" (Stephens), retaining, however, the attribute of kindly and understanding authority, for *familiarity* in doctors breeds *contempt* in patients.

Then follow the various details of physical examination upon which, with the history, the diagnosis must be based and a plan of treatment finally proposed. If the plan proposed is accepted, my next step is to tell the patient that there are no regular or standardized fees for such service and to say that while the physician naturally wishes to obtain as fair a recompense for his services as is consistent with medical ethics, he cannot estimate the actual amount that would in his opinion *be* fair unless the patient is willing to tell him confidentially about both his financial resources and his financial responsibilities. I try to make it clear that this personal question is asked more in the interest of the patient than of the physician. I think I can remember no unfavorable response to such questions. On the contrary, the fairness and consideration of the method appeal to the patient and his coöperation is gained.

One other discussion of monetary matters seems to be appreciated by patients whose treatment is likely to be prolonged or to entail hospitalization. The purpose of this discussion is to give them an opportunity to make a rough estimate of such accessory expenses as x-rays, laboratory tests, physical therapy, hospital board and fees which very possibly will be required in the course of the treatment proposed and which will not be included in the fee paid to the physician for his personal professional services.

Such an interview and discussion, while undertaken mainly for the sake of the patient, looking to his peace of mind, has not rarely resulted in my feeling entirely justified in charging a larger fee than I had supposed from the appearance of the patient he could easily meet without a catastrophic strain on his purse. Such talks may be wearisome but they are not unpleasant, and I believe they are more in consonance with the spirit and ideals of medicine than are interviews between the patient and a lay agent. They need never be stultifying: they are often illuminating, and they do not prevent us from trying, in the words of Nietzsche, "constantly to transform into light and flame all that we see and meet."

Unfortunately, we cannot leave the subject of fees without mentioning, only to condemn, what is called "fee splitting". Despite the efforts of the American College of Surgeons, it seems to be still a prevalent custom in many communities. It is perhaps more common in our own state than we like to believe. I think I have only once recognized its existence, when a practitioner asked me almost directly and without embarrassment if I would give him a proportion of my fee if he should send me a patient. I told him as politely as I could, that as it had never been my custom so to do, I must decline his kind offer. The evils of the practice are at once apparent. No intelligent patient would agree that the selection of a needed consultant should be limited to one who would allow his family physician a "rake off." The ring of a clear conscience is a more pleasant sound than the jingle of more money in our pockets. The custom, when it has been of long standing in a community, is sometimes adopted by physicians without a realization of its iniquities. Education rather than harsh condemnation will often be more effective in rooting out the evil. If you make it an unbreakable rule to send your own bill for your own services to the patient directly and not through the doctor who refers the case, you will escape all taint of "fee splitting." In general be it said that it is fairer to your patients and much more advantageous to yourselves if your bills are sent promptly, at least once a month, and are sufficiently itemized. The patient has a right to know regularly how much he is in your debt and for what services rendered he is being charged.

Investments. As I know nothing about business or finance, I am obviously a most unfit person to give you advice upon the subject of investments which Dr. Gay suggested should be mentioned. Dr. John Birnie has discussed this subject most ably and helpfully in one of his Gay lectures, copies of which are in the school library and may be read there. My observation has led me to believe that most physicians would not make good captains of industry. We decry self-treatment and criticize the layman who tries to steer *himself* out of his own bodily ills. Why should the doctor attempt to sail without a pilot on the sea of finance full of reefs and whirlpools (and stock pools) that not infrequently cause disaster to the most wary navigators? Most of us do better by investing in a wise adviser and I believe the five per cent of income such a pilot usually charges for services is the safest of investments.

Other than this, I have only very general advice to offer. The physician, according to the findings of the Committee on the Costs of Medical Care, must needs practice thrift as well as medicine. Being thrifty does not mean being niggardly, for no doctor should allow himself to be thus labelled by his colleagues or his charges. It would be better for him to be somewhat of a spendthrift, after he had accumulated the thrift to spend. A physician must strive to "see life steadily and see it whole" and this often costs money. There is much in the wise elder man's advice to a young man to "carry his money in a purse until he has reached forty and after that to carry it loose in his pocket."

My own experience leads me to counsel somewhat as follows:

Live respectably always. Neatness and immaculate cleanliness in person count much in a doctor.

Own your own house or its equivalent. No savings bank can make a sounder investment for you.

Provide by insurance or otherwise for the family bed and board in the future. It is worth a real sacrifice of income to have this worry lessened.

Determine a reasonable annual sum for charity, else a physician is likely to give away more than it is fair or wise that he should.

After this, live generously but if possible with increasing simplicity, learning gradually to discriminate between the essentials and the non-essentials of life. It is quite too easy, as prosperity increases, to increase one's menage and to take on disturbing complexities, without adding to the sum total of happiness.

Invest heavily in *memories,* by travel and by contacting with able men working along the same lines as yourself. Periods of depression may wipe out the savings of a lifetime, but they can never erase memories.

Learn to appreciate good literature and good art, looking forward to retirement to a Sabine farm rather than to a marble hall.

Invest also in one or two heroes (preferably medical) to emulate, if not to worship. The selection must be carefully made and when made involves no necessary imitation. It does, however, furnish a strong stimulation to endeavor.

Cultivate hobbies. There are disturbing and arbitrary age limits set to hospital and teaching services, wise no doubt but often cruel. Since that great surgeon and teacher, Sir Harold Stiles, has laid down his professional duties at the Edinburgh Royal Infirmary, he has become almost as eminent and instructive a geologist as he was a surgeon and teacher. Geology has *no* age limits.

Remember above all, as Walt Whitman says, "In the end nothing survives but personal character," almost echoing Sir Thomas Browne, "There is a nobility without heraldry, a natural dignity whereby one man is ranked with another." Gradual accumulation of a large bank account in this coin of all realms is the best investment which life offers.

THE ETHICS OF MEDICINE

I would remind you that six outstanding practitioners of medicine have already delivered lectures under this foundation. Two of these wise men, Dr. Sears and Dr. Bowers, have spoken from notes and I regret to say that their helpful precepts are recorded only in the minds of their fortunate audiences. The lectures of Dr. Birnie dealing in detail with doctors' investments and the standard codes, to which I have already called your attention, are in the School library. Drs. Woodward's, Robey's and Cotton's lectures are preserved in the files of the *New England Journal of Medicine* and I strongly advise you to profit, as I have done, by their careful perusal. I acknowledge many debts of inclusion of material taken from these discourses.

This is the first time that the committee in charge of carrying out the provisions of Dr. Gay's bequest has had the temerity to invite a practitioner of a *special* branch of medicine to discuss the *general* subject of Medical Ethics. I do not know why they did this, but I think they acted wisely, except in their choice of the specialist. The first of my reasons for so thinking is that in any audience of medical students there will be numbered many who will probably eventually devote most of their careers to cultivating intensively a restricted field of medicine. The second is that specialism is rife in these times: Its dangers and its faults demand the attention of all practitioners; the vital, integral relation of the part to the whole needs constant emphasis. Exclusiveness and separation need to be condemned; close association, team play and commonalty of ethics need to be encouraged.

There is at present, and there always has been, much just criticism of the walls which many specialties have built around their limited fields and of the self-imposed incarceration within these walls to which specialists have submitted. A specialty should not erect *walls,* rather it should constantly strive to make *paths* running out in every direction from its own field. It should break down every barrier which interferes with the view of the whole domain of medicine. Nevertheless, it is as unreasonable to condemn the *principle* of specialization as it would be to condemn general practice. Many of you by this time must have become painfully aware of the impossibility of learning in a four or six or ten year medical course all that is already known. The known facts comprise but a small part of the domain of medicine; its unexplored territories are vaster than those already surveyed and mapped. Just ridicule should greet the narrow specialist, as the Sanscrit has it:

> "God himself can never make content
> The man who feels himself elate
> With one small grain of knowledge in his pate."

A specialist who acquires a bag of tricks, be they ever so good, and plays only these over and over again is not comfortable in the company of medical philosophers. Some of you, however, will feel the urge of Kipling's explorer:

> "'Till a voice as bad as Conscience rang interminable changes,
> On one everlasting whisper day and night repeated—so;
> 'Something hidden. Go and find it. Go and look behind the Ranges,—
> Something lost behind the Ranges. Lost and waiting for *you.* Go!'"

If you heed a voice calling you to such endeavor, you will probably turn into the right kind of a specialist, welcome in any medical company, able to join in the general conversation and to tell a good tale yourself.

There may be at least two rewards of specialism. One is, of course, the contribution of new knowledge as to the prevention, the causes or the treatment of illness. The other is even greater, namely, the devising of methods which will be recognized to be of such proved worth that they disappear from the armamentarium of the specialist and become the common property of all general practitioners: Losing your own soul in order that you may find it.

Personal Ethics. I need hardly remind you of the corner-stones of Medical Ethics; of the availability of all medical knowledge and of the sin of secret remedies and of patented medicines or methods. I can think of no circumstance which would make it ethical for a graduate in medicine to receive money either from the sale of his own discoveries or from the proceeds of a concern thus trafficking in health. An epitome of the Hippocratic oath, older than Christianity, is in direct contravention to such practices: "I will follow that method of treatment which according to my ability and judgment I consider for the benefit of my patients and abstain from whatever is deleterious and mischievous." "Into whatever houses I enter I will go into them for the benefit of the sick." "Whatever in connection with my medical practice or not in connection with it I may see or hear in the lives of men which ought not to be spoken abroad, I will not divulge, as reckoning that all such should be kept secret." This sentence of the oath is pertinent to the practice of all gentlemen as well as to medical practice, but it applies with peculiar force to physicians who in the days in which it was written were priests as well as doctors. Medicine, to be sure, has obtained a legal separation from its two original wives, Speculative Philosophy and Religion, but it has not actually divorced either of them. It still must nourish itself at the table of the former, for it will always need philosophic contemplation to help it solve its many mysteries. With its other partner, Religion, it often walks and hears secrets that should be as sacredly guarded as those given to any priestly father in a confessional box. Without these personal revelations it is often impossible to offer the help sought. They should not be discussed with one's own family nor with the patient's family, nor with medical colleagues. Medical men should never keep company with "Gossip." This lady is a loquacious jade, unreliable, untruthful, a disturber of the peace, and up to every sort of dangerous prank.

One exception to the almost unbreakable rule of non-revealing confidence may be demanded today that was not fully recognized two thousand years ago. Neither the patient nor his physician has the right to conceal from the guardians of the public health the existence of contagious disease, even if it falls into the class of those hidden infections which we speak of as the social diseases. Our duty to the health of his family and to the community in which he lives transcends that to the sensibility of the patient.

A few and perhaps unpopular words concerning the medical ethics of alcohol. Most of us believe in the saying that temperance is stronger than abstinence and we are debating no principle of morals. Unfortunately, although alcohol is a valuable drug, we must avoid at all costs exciting in the patient's or his family's minds the suspicion of habitual use or of overuse. A "breath" may have the force of a gale and capsize the boat. No matter what the patient's habits may be, the pot in this instance has a perfect right to call the kettle black. It is unfortunate that so many able physicians' careers have been injured, and not a few have been ruined, by the often unmerited remark of a patient or of a colleague that Dr. Blank drinks too much. Alas, Dr. Blank is the last person to hear of the slander.

No one has ever codified the laws of gentlemanly conduct: They are traditional. The physician as well as the layman is bound by the Golden Rule and by the code of chivalry. The more closely the doctor's character resembles that of the Perfect Knight in strength and skill and sensibility, the better are his chances of becoming the perfect doctor.

Attitude Toward Colleagues. Certain general rules have been laid down that should obtain in regard to the relation of medical practitioners toward one another. Perhaps in no other profession has there developed through the ages so close a bond as that of the whole company of physicians. It resembles that which exists among the members of many fraternal orders. It has been faith in the purposes and practices of medical men in general that has sealed this bond and we must keep the seal unbroken. Bits of the ethical code of the Massachusetts Medical Society illustrate this attitude of loyalty to our colleagues. "If a physician is formally requested to assume charge of a patient or a family usually attended by another physician, he should do so only after notifying the latter." Patients surely have their rights and these are rights not only against what they may believe is bad or inefficient treatment, but rights against incompatibility and the conflicts of personality. The patient or some member of his family must be the one to notify the offending physician, but courtesy as well as expediency usually suggests that the new guide should get in touch with the old one and make it quite clear to the

former adviser that the change was not solicited. Unless this is done, the green-eyed monster often wakes and much valuable past information pointing the way out of the patient's difficulties may be missed. You will all have both these experiences of being discharged and of being employed. In the words of Samuel Barnet, "Unpopularity is no condemnation, neither is it an acquittal." In the medical game, as much of the time as is possible all our cards should be "on the table face up." Except in an emergency, be sure also before attending a case or administering treatment, to ascertain personally that the patient's regular physician will not be available within a safe period of time. Unfortunately, certain people are not above thus attempting to "check up" on their family adviser without his knowledge and without hoisting the anchor which may have provided safe mooring in the past. The commonest reason given for requesting such a visit is that the regular doctor is away. This needs personal confirmation, for he is sometimes sitting idle in his office and explanations after the fact are difficult.

The Massachusetts Medical Society Code goes on to say very properly that "Consultations should be encouraged in cases of unusual responsibility or doubt. Should there be a difference of opinion, discussion should be temperate and always confidential." "In all disputes, so much as there is of passion, so much as there is of nothing to the purpose; for then Reason like a bad hound spends upon a false scent." ("Religio Medici," Sir Thomas Browne.) "A consultant should say, or do, nothing to impair the confidence of the patient or his family in the attending physician." We may add, the consultant should if possible see the case with the attending physician. Misquotation is easy. It is a good working rule that if you are called in consultation by the doctor in charge of a case, you should never accept that case for treatment unless the attending physician specifically requests you so to do. There may be occasional exceptions to this rule when the patient in spite of your advice to the contrary, insists upon discharging his former adviser and has notified him of this fact. Even then, in my opinion, it is wiser still to refuse to treat the patient yourself, but entirely proper for you to suggest some third practitioner in whose skill and judgment you have confidence. I dwell on this working rule a little at length, for it has been my observation that the exceptions made to it are still too numerous. They breed ill feelings easily and often, and this progeny has long life.

The Massachusetts Medical Society Code still frowns upon consultation with "irregular" practitioners and disciples of cults as being both unprofitable and uncomfortable. No interpreter exists who can talk in the two different languages in which such a pair of consultants must converse. In general, it is best to ignore but not to revile special cults or cultists. If one is disturbed at the spread and apparent success of error, take down your volume of Oliver Wendell Holmes' Medical Essays and read "Homeopathy and Kindred Delusions." It will make you feel more comfortable. When special privileges are sought by cults through legislation, organized medicine should fight them tooth and nail, not to stifle competition, but in order to protect the public.

One other precept in connection with colleagual relations, although it has been emphasized in previous lectures, seems to require reiteration. Never in the presence of the patient or the family, except in the rare instance of deliberate malpractice, should we speak contemptuously or even disparagingly of the methods of treatment administered, or of the result obtained, by the patient's former physician. Always assume that he has done his best. Every motive must have induced him to try to do so. Your best may prove to be no better than his. An unguarded, explosive remark, "My God, who did that?" (this is a quotation, not a sacrilege) may lead to an entirely unjust lawsuit being instituted against his former adviser. Unkind remarks of this sort are bad ethics and the repercussion from the blast may do more injury to you when you are summoned as a witness by the plaintiff's attorney than to the defendant whom your shot, thoughtlessly fired into the air, happened to hit.

Before we leave the subject of professional relations, it seems advisable to discuss briefly the apparently growing method of what is called group practice. The American Medical Association has seen fit to point out its possible evils and to discourage its more general adoption. By group practice is meant, not the association of physicians working together along the same lines, but a close corporation of a small group of general practitioners and specialists who, by referring all private patients to one another, attempt to provide them with adequate treatment for all ills. The advantages of such an organization to both patients and physicians are obvious. It is convenient and sometimes economical to the patients and always lucrative to the physicians comprising the group. We see group practice in its best form at such clinics as the Mayos in Rochester and at Dr. Crile's Cleveland Clinic. Such private clinics are really large hospital organizations controlled by dominating personalities whose medical standards are high. We see group practice in its worst form in smaller organizations outside of medical centers, the component members of which are often of unequal ability and experience, especially in the special branches. The patient believes that he is receiving the best possible consultatory advice or operative treatment which the community affords. This is unfortunately rarely the case and the patient suffers for the benefit of the clinic. We should be sensit ve to this possible evil of group practice.

The Physician's Attitude Toward His Patients. Except for an occasional emergency, a physician is under no legal or even *moral* obligation to accept or undertake the care of a patient. It may be even *im*moral for him to do so if he feels himself unequal to the task. But the case once accepted becomes immediately both a trust and a responsibility.

With conscious patients, our first duty is to hear their story related by themselves, and always with sympathetic and unprejudiced ears. Our next step may well be to obtain all the information we can from the sick man's attendants and from his family and, of course, from other medical advisers whom the patient may have consulted. Then comes the question of frequency of visits *to* the patient or *from* the patient. There can never be any working rule for this. The number of advisable visits must vary with almost every patient, depending upon his medical (but never upon his financial) exigencies, and upon his psychology. The physician or his chosen substitute should strive, however, to be always available to the accepted patient. Nothing is more disconcerting to those in ill health than for them to be unable to get in touch with their medical advisers or their accepted substitutes when there is real or fancied need for them to do so.

In contacts with patients the question often arises, "Shall we tell them 'the truth, the whole truth and nothing but the truth' concerning their condition?" We may be unable to answer the question even if a demand is made for the absolute truth by the patient himself. We often do not know the whole truth and patients often respect us more and retain the therapeutically valuable faculty of hope if we honestly admit the fact. It is so easy for us to be mistaken, and dogmatic statements, if unfulfilled, have a bothersome way of being remembered longer than those which prove to be correct. We must, on the other hand, avoid any semblance of "hedging," else we at once lose the patient's confidence. General advice will not help you to answer this question. The patient has every right to expect perfect frankness on the part of his physician, but unless you are absolutely sure (and how rarely can we be sure), do not destroy all hope. She may be "such a poor virtue that disappointment often pays her debts," but she is an enormous therapeutic asset. It is almost always good judgment and kindly action to explain to some member of the patient's family, if not to the patient himself, your feelings concerning the prognosis and your reasons therefor. If it is a fatal prognosis, we may well preach preparedness to our patients, but we should rarely sentence them to death.

This phase of the discussion offers me a chance to say something that I believe is worthy of consideration early in your career. I have found its consideration to be helpful late in mine. It is no less than an admission of lack of faith in either the specificity or completeness of what is generally understood by the words medical and surgical treatment. I find it constantly more difficult to evaluate the importance of the effect that emotional states produce upon bodily functions and, therefore, upon recovery from illness. The profundity of these possible effects may be envisaged when we realize that the blush accompanying embarrassment or the blanching caused by fear, are produced by an actual and considerable dilation or contraction of the capillaries of the face. How vital and unfavorable an effect continued fatigue and worry may exert upon the circulation is worthy of your thought. How large a part emotion plays in digestion has been convincingly and exquisitely demonstrated in Professor Cannon's last Beaumont Lecture. He appears to give credence to a statement which has been made, that fully eighty per cent of persons who consult physicians because of digestive disorders do so because of some disturbing emotional factor. He says, "Only gradually as new evidence came in did I learn that in addition to the well-known acceleration of the heart and rise of blood pressure that result from emotional disturbance, there is a complex of other changes including redistribution of blood in the body, a discharge of extra corpuscles from the spleen, a more rapid coagulation of the blood, an increase of blood sugar and a dilation of the bronchioles." How greatly recovery may be favored by rest and confidence suggests strongly that every physician, internist or surgeon, general practitioner or specialist, should search his patient's mind as well as examine his body. If he can lead him into a state of equanimity, his medicine and his surgery will be the more successful. I am far from meaning that we must all become psychoanalysts. Psychoanalysis involves real danger as well as possible better adjustment. The mind, like nature, seems to abhor a vacuum and while the unwary psychiatrist may successfully remove a large quantity of errors, unless he succeeds in putting back something more valuable than the stuff he removes, the old stuffing may be better than no stuffing at all and the last state of that man or woman may be worse than the first. False ideals must be replaced by new and truer ones if psychoanalysis is to be completely successful. I am convinced, however, that it behooves us to learn more of psychiatry and practise its healthful tenets if we are to fulfil our whole duty to our patients and receive the largest measure of the satisfaction which is the reward of work well done.

It is a sad fact that some of our patients will die in spite of, and perhaps because of, our earnest but mistaken attempts to aid nature in healing them. You remember the old saying of Paré, "I dress the wound but God heals it." We must accept this sorrow as a part of our discipline. I admire the attitude which one of your former lecturers (Dr. Woodward) has taken in

regard to a question which is likely to trouble you at the bedside of a patient whom you believe to be dying. Dr. Alfred Worcester, one of the company of the great physicians who, when in practice, was accustomed to sit beside his patients during their last hours or even days of life, has testified to the fact that death agony is rare, and that the end is usually free from pain. In the presence of a peaceful death, the question I have mentioned will not arise. If suffering is acute and the end inevitable, it will arise: "Have I the right to ease these distressing last hours by pain-relieving drugs no matter what dosage is necessary to accomplish this purpose?" The right cannot be granted to you legally for quite obvious reasons. We have all of us seen cases we believed would be quickly fatal eventually recover. And yet I feel as Dr. Woodward did when he said, "I have no sympathy with the man who would shorten the death agony of a dog but prolong that of a human being."

Attitude of the Physician to the Community. You well know that traditional attitude of the rural physician toward his community and the community's attitude toward him: very peculiar, very beautiful and very rewarding. We cannot keep all of it in large urban centers. Specialism interferes with it; not only medical specialism, but the specialism of the other professions and of business. None the less, the physician may preserve the rural ideal of trusted adviser in regard to family health, even if he ceases to be the priest, the lawyer and the financier all in one. The ideal needs cherishing in these days.

I may be mistaken, but I think there should be a powerful doctor on the board of trustees of every hospital. I am convinced that few of us should shrink from what is termed medico-legal work. It is time-consuming and often annoying, but there are laws involving physicians and demanding good physicians for their just execution. I urge you strongly to read Dr. Cotton's 1932 lecture on the subject of "Medicine, Ethics and Law."* It would be futile to try to say over and over again the things he has said so well in regard to the Workmen's Compensation and Insurance Laws and in regard to medico-legal testimony. We most of us carry liability insurance against malpractice suits, either independently or through our state societies. It is safer to do so and in unimportant cases involving no principle, it is often justifiable to allow our insurance agents to settle our cases out of court. I believe, however, that sometimes it is our duty to fight our cases through *in* court, disagreeable as it may be for us personally to do so. If our cause is just and we win, a strong inhibition is established against the bringing of future suits against other members of our brotherhood.

*New Eng. J. Med., Mar. 16, 1933.

It is venturesome to offer an opinion as to what the attitude of the physician toward life in general should be. Yet since so strange a title as the Theology of Medicine has been chosen for a lecture on Medical Ethics, it may not be entirely out of place. There is undoubtedly a place for reformers; without reform progress lags; but surely not everything one meets needs to be reformed. When we feel, as indeed we should at times, that we are in partnership with the Almighty, it is necessary to remember that the Almighty may have other partners. The open mind seems to be the attitude for which to strive. If our minds are closed, if we fail to consider that there is great likelihood that the other fellow's brain may be as fine as our own and his motives as high, we may fall into the pit we are digging for our opponents. We must try to obtain the other side's point of view. It is possible that our own is obstructed. "Protests against (supposed) error (may) become in their turn error." The open mind is the best guide to the open road. Slavery to tradition is bad, "Idolaters recognize no change," but respect for tradition is good. Tradition is strong and there are usually cogent reasons why a medical practice has grown into a tradition. Dr. Jowett used to say that "The great man is he who does original things in a conventional way." I am not preaching lethargy and complacence, but trying to plead for alertness combined with wisdom and with what the theologians call reverence. Jesus commanded his disciples to be "wise as serpents," but he then admonished them to be "harmless as doves."

In conclusion, it may also be fitting for those to whom is assigned the task of giving you the fruits of what experience they have had, to discuss occasionally and briefly what they may consider to be the attributes of ethical success. Among the many we will choose seven, which seems to be the Biblical number.

1. *Preparedness.* Preparedness not to fight men but to conquer sickness. The initial preparation you are now experiencing is the first step. Next comes the formation of a habit of always being a little "ahead of the game," of being prepared not only for the probable but also for the possible. The acquiring of this faculty neither makes a man a pessimist nor unmakes an optimist. Preparedness does not suggest "looking for trouble," per contra, the surest way of avoiding this unpleasant fellow is to be ready to meet him if he turns up. It will diminish the number of emergency disasters and temper the blows of self-castigation when disasters occur. "Could I have acted more wisely?" is a much less scourging question to be obliged to ask oneself than, "Why was I caught unprepared?" *Semper paratus* is an excellent medical motto.

2. *Persistence.* William the Silent said, "It is not necessary to have hope to begin nor success to persevere," and this is true, but "Before the gates of excellence the High Gods have

placed sweat. Long is the road thereto and rough and steep at the first. But when the height is achieved, then there is ease—though grievously hard in the winning." (Hesiod.) Work, of course, and hard work; yet hard work does not necessarily involve a wild attempt to keep up with "the pace". In these days few doctors are burned at the stake, but continuing overwork and overworry, the struggle to be a little more energetic than our fellows, are at present burning up the vital energy of too many American physicians at the zenith of their power for good. "It is the duration not the intensity of ideals that makes a great man." (Elihu Root.) Too much "busying" is the attitude of small men.

3. *Punctuality.* Sir William Osler is quoted as saying that keeping every medical appointment on time will do more than anything else to favor the success of a young medical man's career. There is much in this remark. Punctuality means an always thereness-when-needed that both patients and colleagues appreciate greatly. A patient resents having a prearranged visit postponed without notification and an *on*-time consultant feels annoyance if he is obliged to wait for an *off*-time one. Dr. Blank who is always late is almost as likely to be unsuccessful as Dr. Blank who drinks too much.

4. *Precision.* Devotion to detail is always and quite properly not only grateful to patients, but gives them a sense of security. The patient considers casualness an enemy to his health and a friend to his illness. There is as clear a dividing line between precision and fussiness in medical treatment as there is in operative surgery. Each stroke of the tongue as well as each stroke of the knife should be clean, and have a definite purpose. Instruction should be given with as few and simple precise words as possible. Every cut of the scalpel should be made with purpose, gentleness and precision.

5. *Prudence.* Prudence connotes cautiousness but never timorousness. We are sometimes forced to take risks, for certainty may elude us, but the risk should be the safest we can plan and never a rash adventure. There is no place in medicine or surgery for temerity. Prudence is almost synonymous with good judgment. Some men are born with a higher degree of this priceless asset than are others. If it is not congenital, it may be acquired. Dr. Gay, the founder of this lectureship, was noted for its acquisition. If you can learn how to form an opinion as to accurate diagnosis and appropriate treatment, you will have attained the first objective of your campaign. Prudence bespeaks contemplation, contemplation brings calmness, calmness *begets* confidence, and good judgment is the name by which your patients will call the child you have bred.

6. *Patience.* Medicine is a relay race. We must pass on the torch even if we do not light many fires on the way. "The end is forbidden" to many of us. No matter how seemingly unproductive our work may be or how futile plodding research which does not "arrive" may appear, foundations can only thus surely be laid upon which those who follow us may erect structures of sufficient height to afford eventually a sight of the Promised Land. In purely clinical endeavor also, patience is necessary. Benjamin Waterhouse, first Hersey Professor of Medicine at Harvard, said, "Acute disease is sent by the Powers above; chronic disease we bring on ourselves." Chronic diseases are still the chief causes of disability. Their fields are the least well tilled. The harvest is plenty, but the laborers are still too few. To treat chronic disease successfully requires unending patience with ourselves, with our charges, with our colleagues, with the institutions which we serve; yet the rewards of the exercise of patience are among the richest and most heartening of a medical career.

7. *Piety.* To be consistent with my title and asking you to bear in mind that "a sinner may preach a good sermon," and that speaking *ex cathedra* is farthest from my thought, I am including piety as a medical virtue because, as Mr. Agassiz said at the inauguration of Professor Conant as President of Harvard, "In a just estimate of the real values of life the spiritual outweighs the material." Samuel Johnson, master of accurate statement, in his famous dictionary defines piety as "the discharge of duty to God and to those in superior relation." The relation of a doctor to his patient is surely a superior relation, and we all wish to discharge our duty. Medical piety has no connection with loud prayers in the market-place. It does not involve adherence to any creed or religious sect. It necessitates no conversation with patients on religious subjects. Perhaps the only disturbing characteristic one detects in the so-called modern generation (as if every new generation were not modern) is that it seems to be in danger of losing the faculty of Wonder. A physician can ill afford to lose it. It is the piety like that of Sir William Osler that I have in mind. Behind his boyish practical jokes and his quaint humorousness was a deep love of humanity and a strong faith in a mysterious purpose. The mystery he did not try to penetrate, but to worship while he strove to fulfill the purpose.

In the building of your medical careers, I can do no better than to suggest that the edifices of character and ethics which you are to erect are likely to be creditable if you follow the only directions which were given to the architects of the Cathedral of San Miniato nearly five hundred years ago. These inclusive building instructions were that it must be "worthy of a heart expanded to much greatness".

One more bit of advice and I am done. It is

not my own, nor was it dictated by the black-coated clerical Mather, but is supposed to be the counsel which Robert Louis Stevenson would have given to young men. "Do not assume an attitude toward life at all, but just live. Do not be a spectator or critic of the business of living, but throw yourself into the heart of it. Be all there and say no more about it."

THE ASSOCIATION OF DIABETES AND TUBERCULOSIS*

IV. Treatment, Prognosis and Prevention

BY HOWARD F. ROOT, M.D.†

OUTLINE

A. Treatment.
  1) Insulin, frequency and size of dose.
    a) Blood sugar.
    b) Dosage and tolerance.
    c) Hypoglycemia.
    d) Resistance to.
    e) Nutrition.
    f) Duration of life.
  2) Diet.
    a) High carbohydrate.
    b) Protein and Fat.
    c) Calcium.
    d) Restriction of salt.
  3) Acidosis and Coma.
  4) Remarkable Cases.
  5) Of Tuberculosis, General Considerations.
    a) Sanatorium vs. Home.
    b) Collapse Therapy.
    c) Arrest.
    d) Occupation.
B. Prognosis.
  1) Effect of Insulin.
  2) Affected by advanced stage of Tuberculosis.
  3) X-ray findings.
  4) Other factors.
C. Prevention.

A. TREATMENT. 1) INSULIN. General agreement upon the great value of insulin in the treatment of diabetic patients with pulmonary tuberculosis has taken the place of the early hesitancy. Unfavorable reactions, reported at first by Güdemann[1], Dreyfus-Sée and Rathery[2], Blum and Schwab[3], Dünner and Dohrn[4], and Wagner[5], were in part due to protein impurities, later removed by better manufacturing methods. In young diabetics insulin should be given as soon as the diagnosis is made. In children and young adults who have been exposed to an open case of tuberculosis insulin should be given promptly and continued unless it is known that exposure has ceased, the patient's weight and general health are normal, and the urine and blood sugar are normal with an adequate diet.

Frequency. Insulin may be given from one to four times daily according to the severity of the diabetes or the need for a patient to have a diet well above the minimal caloric value in order to insure gain in weight. Usually a given amount of insulin is more effective if divided into two doses, one given before breakfast and one before supper than if given in a single dose. Frequently, especially in childhood, a third dose may be added at bedtime because in diabetes of more than slight severity there is a definite rise in blood sugar during the hours of sleep. Insulin at bedtime controls this hyperglycemia and may allow the patient to start the day with a blood sugar relatively lower and therefore controllable by a smaller dose of insulin.

Size of Dose. Few diabetic patients when using a well-planned diet require more than 50 units of insulin in the 24 hours. Much larger doses may be used when necessary if the patient is protected against reactions by frequent giving of carbohydrate in small amounts, such as 10 grams every 2-3 hours. Patients with tuberculosis are affected by insulin in varying degrees in different stages of the disease. Patients in terminal stages of the disease with extensive processes and especially with low plasma cholesterol values are sometimes so sensitive to insulin that five or ten units may bring about hypoglycemia of a very serious degree. Among 144 cases the average insulin prescribed at discharge at the New England Deaconess Hospital was 28 units. The smallest daily dose was two units and the maximum dose 83 units.

The distribution of injections in various parts of the body so that injections will not be repeatedly given in the same neighborhood is desirable. Atrophy of subcutaneous fat has not been noted in cases with pulmonary tuberculosis although it is not rare in diabetics generally.

a) *The Blood Sugar and Insulin.* Although blood sugar analyses are not indispensable in the treatment of diabetes, their value as an aid in adjusting diet and insulin is attested by their frequency in the case records of the best sanatoria and private hospitals where tuberculous diabetics are received. The blood sugar in non-diabetic tuberculosis at times falls to a low

*From the George F. Baker Clinic, Elliott P. Joslin, Director, New England Deaconess Hospital, Boston, Mass.

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†Root—For record and address of author see "This Week's Issue," page 225.

level, particularly in emaciated and advanced cases. Similarly patients with diabetes are subject to sudden falls in blood sugar and unless analyses are made at frequent intervals it is easy for insulin which was once the correct amount to become dangerously excessive. An excellent illustration of the variation in the fasting blood sugar of the tuberculous diabetic is afforded by the record of a patient, aged 35 years, kindly sent me by Dr. A. S. Pope. Blood sugar analyses, recorded usually once a week, varied from 85 to 350 mgs. during a period of almost two years. Her diet was carbohydrate 102 grams, protein 100 grams, fat 150 grams. The insulin dose varied somewhat according to her condition, ranging from 30 units to as much as 120 units a day. These variations were in large measure due to various complications. She was very ill on admission to the sanatorium with a positive sputum, the left lung was involved throughout and the right to the sixth dorsal spine. She developed pneumothorax and ischial abscess, a severe neuritis of both arms and chronic diarrhea. At the end of the period, her chest and general condition were much improved with a corresponding reduction in the insulin dosage.

b) *Insulin Dosage and Tolerance.* Variations in tolerance of the tuberculous diabetic are a frequent occurrence. The remarkable gain in tolerance which occurs in tuberculous cases as the disease advances has been noted by Joslin[6], by Umber[7] and Grote[8]. In some cases, especially older patients, an elevation of the renal threshold for glucose is encountered. The urine is sugar-free even when hyperglycemia is marked, especially if arteriosclerosis is advanced and the diabetes is of considerable duration. However, true gains in tolerance not dependent upon changes in the threshold are not infrequent. Sometimes such change occurs almost overnight as in Case No. 11471 (cited below). More frequently the change is gradual as in Case No. 344 whose carbohydrate tolerance changed from minus 85 grams in July, 1910 to plus 60 grams in April, 1912. Such remarkable gains in tolerance are not the rule. In general the development of tuberculosis particularly if it is associated with general toxic symptoms has an unfavorable effect upon diabetic tolerance. This effect diminishes as the tuberculosis improves. Further, one must not forget that almost any diabetic gains tolerance under a constant dietary régime in a hospital. Labbé et al[9] report five cases of a decrease in tolerance produced by the development of active tuberculosis. Case No. 4763 increased insulin during the month after tuberculosis was at its height, but a year later her insulin dose was reduced one quarter. Le Noir's remarkable case, a boy 19 years of age, treated by pneumothorax in 1926 had coma in 1927. In December, 1928, a cataract had disappeared. He was taking 280 units daily, and had received a total of 132,000 units. The maximum dose required by any of our cases not in coma was 83 units daily used by Case No. 2179 in a California sanatorium.

The average insulin dose of 18 tuberculous cases at the Deaconess Hospital between the ages of 15 years and 29 years was 39 units. Their average weight was 118 pounds and age 23 years. Joslin[10] tabulated 40 cases (non-tuberculous) in the same age period, finding the average insulin dose varying from 34 units for cases treated in 1923 to 47 units for cases treated in 1926. The average was 37 units daily. The average age of his cases was 22 years and the weight varied from 110 to 137 pounds.

Twenty-five tuberculous cases between 40 and 54 years of age received an average of 25 units daily. For a similar group of 40 non-tuberculous diabetics tabulated by Joslin the insulin dose varied from 11 units in 1923 to 27 units in 1926. The carbohydrate of the diet varied from 64 to 99 grams. The average weight of the tuberculous was 129 pounds and the average weight of the non-tuberculous was 125 pounds. If one classified cases according to the duration of the diabetes, the average insulin dose at discharge from the hospital for 36 tuberculous cases with duration of diabetes less than two years was 26 units. For 50 cases with duration over five years it was 28 units. On the average, therefore, the insulin dose of diabetic patients with tuberculosis does not vary greatly from the average for the sample groups of diabetics tabulated by Joslin. These surprising results indicate that the harmful effect of tuberculosis upon diabetic tolerance is easily exaggerated. No one can doubt that during fever and toxemia of an active advancing process the insulin requirement will be increased. On the average, however, when careful dietary régime and rigid adjustment of insulin dose to avoid hypoglycemia and wastage of insulin are employed, no evidence of a great increase in the insulin requirement for tuberculous diabetics appears.

c) *Hypoglycemia.* Hypoglycemia is not rare in tuberculous diabetics undergoing dietary treatment in the hospital owing to simultaneous rapid changes in diet and insulin dosage. Both factors have a pronounced effect upon the blood sugar and the urine sugar so that occasional hypoglycemia may be expected. However, only 15 patients were found to have had hypoglycemia while under observation at the Deaconess Hospital.

The symptoms may vary greatly from the standard sudden onset of weakness, tremor, sweating, extreme hunger followed by convulsions. Any or all of these symptoms may be absent. Diplopia, occurring as the sole symptom, or other purely nervous phenomena must be kept in mind. Case No. 4743, a nurse, aged 25 years in December, 1932, was thought to be merely hysterical at 4:30 P. M., but her blood

sugar was 0.04 per cent. Case No. 11471 suddenly developed generalized convulsions without any warning. Monoplegias or an unresponsive state with flaccidity of all muscles has been observed. When in doubt a blood sugar analysis at the time of symptoms is essential. Every tuberculous patient, therefore, needs to be on guard against hypoglycemia.

In 15 tuberculous diabetics a total of 35 blood sugar values of 0.08 per cent or lower occurred. Six of the 15 were males. Nine were 30 years of age or younger and only one over 50 years. The greater liability of the blood sugar in youth accounts for the greater frequency of insulin reactions at this period generally, whether tuberculous or not. The most frequent period of development is between 11 A. M. and noon, although late afternoon and the evening between 9 and 11 P. M. each had five instances. The time elapsing since the preceding insulin dose in one case was only a half hour but usually the period was from three to five hours. Case Nos. 2274 and 2687 had hypoglycemia without preceding insulin before pulmonary tuberculosis had developed and later hypoglycemia of similar degree when tuberculosis had developed.

The carbohydrate of the diet in the preceding 24 hours varied so widely that the only conclusion to be made is that it has less influence than the amount of insulin given and the condition of the patient, especially the degree of emaciation, and toxemia. Thus in Case No. 11471 whose record is summarized in table 1 only 15 units of insulin produced almost fatal hypoglycemia. She had extensive tuberculous pneumonia and died within a week. For autopsy report see table 1, Chap. II, *New. Eng. J. Med.*, Jan. 11, 1934.

The duration of diabetes has little influence upon the liability to hypoglycemia. In general, although hypoglycemic reactions have occurred both in cases with active and inactive processes, patients with advanced lesions and acute toxemia seem especially liable to them.

It is important to remember that Addison's disease is characterized by hypoglycemia and its occurrence with small doses of insulin may give the clue to the diagnosis. Gowen[11] describes a patient, female, 54 years of age with old fibroid pulmonary tuberculosis, pigmentation of the skin, basal metabolism minus 34 per cent, blood pressure systolic 84, diastolic 54 and blood sugar 0.166 per cent. Five units of insulin repeatedly produced severe hypoglycemia reactions. Treatment with thyroid extract, adrenalin, and whole gland suprarenal gave temporary improvement. Autopsy revealed atrophy of the adrenals, absence of medullary tissue, and compensating hyperplasia and hypertrophy of the remaining cortical cells. Reference is also made by Gowen to six cases reported by Allen, 2 cases by Umber[12] and one by Unverricht[13].

In Addison's disease atrophy or destruction of the epinephrin-secreting tissue destroys an essential component of the insulin-antagonistic system. Without epinephrin to be liberated when the blood sugar falls under the influence of insulin and thus no key to unlock the stored glycogen, the normal check upon the descent of the blood sugar is lacking.

Another essential in the insulin-antagonistic system is a supply of glycogen readily available in the liver. Where this is diminished or absent under conditions of extreme emaciation, malnutrition or even of tuberculosis of the liver as in Case No. 11471, hypoglycemia may result with small doses of insulin.

Adenomata or carcinomata of islet tissue must not be forgotten as a cause of hypoglycemia.

Sensitiveness to insulin is described by Gris-

TABLE 1

CASE No. 11471, Housewife. Onset of Diabetes at 44 years in July, 1928. Maximum weight 167 net, 1928. Weight November, 1932, 80 pounds. Died November 11, 1932—Tuberculous pneumonia with tuberculosis of liver, spleen and ileum.

Date	Urine		Blood Sugar		Diet				Insulin
1932 Nov.	Sugar Per Cent	Nitrogen Gm.	Per Cent	Time Taken	Carb. Gm.	Prot. Gm.	Fat Gm.	Cals.	Units
3	6.0		0.42	7 P.M.		One meal			
3-4	5.0				39	10	20	376	15
4-5	0.2		0.05	Fasting	123	39	78	1350	15
5-6	Trace		0.04	8:15 A.M.	149	34	70	1362	0
			0.06	Noon					
6-7	0		0.21	11 P.M.	133	39	70	1318	0
7-8	0	5.0			123	36	77	1329	0
8-9	0	5.5	0.09	Fasting	138	39	74	1334	0
9-10	0	6.2	0.17	11 A.M.	129	42	84	1440	0

NOTE:

Blood non-protein nitrogen 30 milligrams.

White blood count 2,400. Polymorphonuclear leucocytes 77; lymphocytes 19; large mononuclears 3; eosinophiles 1.

Blood calcium 9.1 milligrams. Blood phosphate 2.5 milligrams.

Plasma cholesterol 72 mgms. November 3.

haw[14] whose patient, a man of 38 years, had had tuberculosis for many years. He had bilateral pleurisy at 18 years of age. In 1929, because of bilateral tuberculosis with a cavity, pneumothorax treatment was given. When insulin was begun local reactions occurred but on the twenty-fifth day of treatment general urticaria with itching lasted four hours. A second injection gave the same result. Insulin from three different companies was employed and that from the third company gave no such urticaria. He concluded that in two insulin preparations a precipitable substance was present which caused reactions similar to those observed in protein sensitive cases. In a considerable proportion of all diabetic patients local sensitiveness to insulin is observed during the first few weeks of insulin treatment. Redness with slight induration about the site of injection with itching is noted. Such sensitiveness as Grishaw describes has not been seen in any of the cases of this series.

d) *Resistance to insulin* has been reported by Mohler and Goldburgh[15] in a man of 72 years with alcoholic history, diabetes, cirrhosis of the liver and pulmonary tuberculosis. The onset of the diabetes was in 1919. In 1928 tuberculosis was discovered and he had a hemorrhage. Sputum was positive for tuberculosis. In 1929 he required 470 units of insulin a day and the dose was gradually increased until he received 1150 units on November 3, 1929. In a non-tuberculous case with hemochromatosis from the Deaconess Hospital series, 1600 units of insulin daily were required. (Root[60].) No instance of resistance to insulin in a diabetic complicated only by tuberculosis has come to my attention. The use of the term "resistance" should be restricted to cases requiring more than 200 units a day for considerable periods of time, so as not to include periods of acute illness as in coma or severe infections.

e) *Insulin and nutrition.* That the earlier ideas regarding the harmful effects of insulin upon pulmonary tuberculosis may be discarded is indicated by the many reports of its usefulness in treating non-diabetic tuberculosis.

Barker[16], in recommending the use of insulin in a non-diabetic man with pulmonary tuberculosis who was 60 pounds under weight, reports his use of insulin in nervous emaciated individuals. Jacquerod[17] and F. M. Allen[25] describe excellent results with insulin in treating pulmonary tuberculosis and quote other observers. In one case the local urticarial reactions required discontinuance of the treatment. The possible effect of insulin in reducing the carbohydrate tolerance of non-diabetics must not be forgotten, as noted by Blotner[59]. This effect so far has been only temporary.

From this series of 144 tuberculous diabetics who received insulin, remarkable instances of improvement in nutrition may be cited. Case No. 3775, male, aged 64, gained 20 pounds in a year with insulin 30 to 40 units daily. During the same period roentgenograms showed reduction in size of a cavity. Case No. 5448, male, aged 51 when tuberculosis was discovered in 1926, gained 30 pounds during the next six months in a sanatorium. Death in July, 1929 was due to cerebral hemorrhage. The remarkable gain in height and weight of Case No. 2274 is recorded under figure 9, Chap. III, *New Eng. J. Med.*, Jan. 18, 1934. In spite of diabetes and pulmonary tuberculosis he grew 15 inches and gained 53 pounds between 1921 and 1931 under home treatment. Gain in weight is the rule with adequate diabetic and sanatorium treatment except in the most unfavorable cases.

Omission of Insulin. The effect of tuberculosis in a toxic stage upon the reaction of a diabetic to insulin may be compared to the effect sometimes observed with diabetics under the influence of other types of infection. In table 2, Chap. III, *New Eng. J. Med.*, Jan. 18, 1934, are summarized the records of two cases at the Deaconess Hospital who, during the course of long-continued pyogenic infections, developed a remarkable tolerance and were able to give up insulin. Rabinowitch[18] describes a non-tuberculous man with infected prostate, near coma, requiring 40 units a day, who eventually was able to take a diet of 218 grams carbohydrate but also to give up insulin entirely. Case No. 7565, aged 39 (non-tuberculous), required 70 units during coma in the fourth month of pregnancy, left the hospital with a diet of 161 grams carbohydrate and later required no insulin. Such cases following a stage of coma are not very common.

Omission of insulin after operation occurred with Case No. 3559 who entered the hospital with 5.0 per cent sugar in the urine and a blood sugar of 0.33 per cent. Her maximum dose was 40 units following amputation of a leg for gangrene. During the last 10 days of her hospital stay no insulin was given and the blood sugar was 0.11 per cent before her discharge. Such incidences of improvement occur without tuberculosis in insulin cases. Indeed even before the discovery of insulin such improvement was not unknown. It is not rare in cases of gangrene after operation and is not sufficiently emphasized by most writers.

Case No. 11471 shows the extraordinary effect of a small dose of insulin in a terminal stage of tuberculosis. With only 15 units of insulin within 12 hours the sugar which had been 7.2 per cent in the urine disappeared and the blood sugar fell from 0.42 per to 0.05 per cent. Even though she received glucose solution a spontaneous hypoglycemia occurred later. She received no more insulin until her death a week later. It is notable that the plasma cholesterol was only 72 milligrams on November 3 and 68 milligrams on November 6.

Case No. 5976 had a very large irregular but not nodular liver. The right lobe was larger than the left. The spleen was not felt. On April 15, 1927 she had 5.2 per cent sugar in the urine and the blood sugar was 0.28 per cent. She has had angina pectoris since 1921. X-rays at this time showed calcified tuberculous glands in the abdomen and calcified tracheobronchial glands. Insulin dose was 27 units maximum. In August, 1930 she returned to the hospital with a cough, sputum and the x-ray showed a large wedge-shaped area on the left with its base in the second and third interspaces. The sputum was negative. Insulin was omitted within a few days. Possibly she represents a case in which cirrhosis of the liver was the important factor in bringing about an apparent disappearance of the diabetes.

In general insulin should rarely, if ever, be omitted in a child with pulmonary tuberculosis although it may be necessary to omit it in emaciated, advanced cases of any age in a terminal stage. Certain cases in moderately advanced or far advanced stages of tuberculosis show such an extraordinary gain in carbohydrate tolerance that insulin at times may be omitted especially if the blood sugar is normal or tends to fall to a hypoglycemic level. In preventing tuberculosis and in treatment of early stages, control of the diabetes is of fundamental importance. In our children it is among the group with least well controlled diabetes and failure to adhere to diet that tuberculosis has developed.

f) *Insulin and Duration of Life.* Among 144 cases who have received insulin, 70 are dead. The average duration of life figured from the onset of diabetes in these fatal cases was 8.9 years. If we exclude Case No. 1257 with duration of 23 years on the ground that tuberculosis was healed, at autopsy, the duration is reduced to 8.6 years. In 1928, Joslin tabulated the duration of life of 600 fatal diabetics, who had died between August, 1922 and August, 1926. The average duration of life for this group was 7.4 years. The surprising conclusion that, even in fatal cases, pulmonary tuberculosis has not shortened the life of the diabetic must be qualified. In the first place among my 70 cases, deaths as late as November, 1931 are included, allowing a much longer period for the beneficial effects of treatment. In the series of 600 diabetics (non-tuberculous) some, although probably not the majority, had received no insulin. Furthermore, the exclusion of living cases lowers the average duration of life relatively more in the non-tuberculous than in the tuberculous since in this way the large group of young diabetics who now live for long periods are omitted, and the great majority of deaths occur late in life when many other factors enter in. Nevertheless there can be no doubt that insulin treatment increases the duration of life of the tuberculous diabetic. Among 92 fatal cases treated without insulin the average duration of life from the onset of diabetes was 5.6 years for 18 females and 6.0 years for 74 males. If two exceptional cases with diabetes of 21.1 and 32.4 years' duration be excluded, the average duration for the entire 90 cases is but 5.4 years, as compared with 8.6 years for the 70 cases treated with insulin. The diet for the tuberculous diabetic should not be such as to bring about undernutrition. On the other hand the one principle upon which all students since Bouchardat have agreed is that control of the diabetes is of fundamental importance in managing the course of the tuberculosis. Therefore, it is necessary to plan a diet and insulin treatment so that the blood sugar will approach normal and the urine be sugar-free as much of time as is practicable without the danger of insulin reactions. Fortunately almost any dietary combination can be so managed with the aid of insulin as to maintain a reasonable control of the blood and urine sugar.

2) Diet. An analysis of the records of the last ten cases of active pulmonary tuberculosis in diabetics treated at the Deaconess Hospital in 1931 and 1932 shows that all but one were males and the average age was 36.2 years. In two cases the tuberculosis clearly antedates the diabetes. In Case No. 3141, a chronic process began at the age of 39 years. The hospital stay varied from two to six weeks, when all but two were transferred to sanatoria. The changes in weight were slight, in accordance with the short period of observation.

No patient had less than 100 grams carbohydrate even during the first week when glycosuria was marked. At discharge the diets contained on the average carbohydrate 157 grams, protein 83 grams and fat 116 grams, calories 2209. The average calories per kilogram body weight were 34. Weskott[19] advised 35-40 calories per kilogram. Insulin was omitted in one case. The amount prescribed in the other nine varied from 12 to 77 units. In five cases the insulin dose was reduced during this period of treatment, in four it was increased and in one it was unchanged. The average daily dose was 42 units for both the first and last weeks. For a group of 30 standard non-tuberculous diabetics treated in 1933 at the Deaconess Hospital the average daily dose of insulin was 26 units on the last day of hospital treatment. Their diets contained an average of 153 grams carbohydrate and only 28 calories per kilogram body weight. More important in its influence upon the insulin dose is the fact that nine of the ten tuberculous cases were acutely ill with fever and pulmonary cavities. All had tubercle bacilli in the

sputum. Their average age was four years less and the average duration of diabetes was 7.2 years or (29 per cent) greater. The average duration of the diabetes was 7.2 years up to July, 1932. All are living in December, 1932.

a) *High Carbohydrate Diets*: The use of higher carbohydrate diets was begun among a few diabetics at the Deaconess Hospital about 1923. The average carbohydrate prescribed has steadily increased, although it has not for any group reached the amounts advocated by Sansum et al[20] in 1926. In the 10 cases summarized above the average carbohydrate was 157 grams. Kutschera-Aichbergen[21] studied three cases of severe diabetes and exudative tuberculosis on varying diets. When large quantities of carbohydrates and the corresponding amount of insulin were given, the tuberculosis lost its former malignancy and took an unusually mild course. Kutschera-Aichbergen also noted an increased sugar tolerance. In spite of a greater carbohydrate intake the insulin requirements are now less than they were before, during the time when the patient's carbohydrate intake had been curtailed. Delijannis and Petassis[22], reporting in 1932 from Vienna 70 cases of tuberculosis and diabetes, describe a diet of approximately 100 grams carbohydrate, 70 grams protein and 150 grams fat.

Rosenberg and Wolff[23], on the other hand, emphasize "uberinsulinierung" and apparently have used diets containing from 24 to 60 grams carbohydrate with sufficient insulin to produce a normal blood sugar, a sugar-free urine and indeed, a balance such that insulin reactions are near at hand. They hold that such treatment tends to convert the exudative type of tuberculosis into the fibrosing less destructive types. They also emphasize increasing the protein above one gram per kilo and calories above 25 per kilogram if necessary to maintain positive nitrogen-balance. On the whole we conclude that in the great majority of cases the diet should include approximately 150 grams carbohydrate.

6) *Protein and Fat in the Diet.* 1) Protein. McCann[24] studied the metabolism of non-diabetic patients with pulmonary tuberculosis and as a result recommended for the average adult a diet containing from 60 to 90 grams protein, fat liberally, and carbohydrate sufficient to make the total calories from 2500 to 3000. These measurements agreed with other observations in showing that there tends to be a loss of nitrogen from the body in active tuberculosis and he therefore warned against too great a restriction of protein. Perhaps 120 grams a day is a maximum and 50 grams a good minimum. Allen[25] believes that the gain in weight made possible by the use of insulin even in non-diabetic tuberculosis improves the resistance and aids in healing. 2) Fat. The various relationships of fat in the diet are complicated. Grote[8] feels that any fever causes a heightened tendency toward the breakdown of protein which would give free amino acids and a tendency toward acidosis. He prefers a diet rich in fat. To one man sixty years of age with cavities he gave only ten grams of protein daily with a high carbohydrate in the diet and obtained a positive nitrogen balance. Now, however, with insulin he does not feel that such limitation in protein is necessary. Dehydration and the use of salt-free diets tend to help exudative and inflammatory lesions. Rapid changes may be made in fat intake without finding any evidence of change in the basal metabolism. It is well-known that the human body can hold in reserve large amounts of fat and draw on them at will. On the other hand it has been said that animals overfed on fat showed an increased resistance to tuberculous infection in contrast to the lessened resistance manifested by animals fed chiefly on carbohydrate. McCann found that for one unit of heat produced from dextrose there is nearly 30 per cent more carbon dioxide than that derived from the same energy produced from fat, so he advised a diet composed largely of fats up to capacity as the one which produces the least demand upon the function of the damaged lungs.

Recently Sansum, Rabinowitch, Geyelin and others have advocated diabetic diets containing lesser amounts of fat. In fact as little as 40 grams a day have been used. Under such circumstances carbohydrate may be increased to from 200 to 300 grams a day. Whether such extreme reductions in the fat of the diet are desirable seems uncertain. Best[26] has shown that the depancreatized dog will not live even with insulin for an indefinite period without certain lipid substances. Thus whole pancreas was fed successfully. Then lecithin was used and finally cholin alone would prevent the fatty deposits in the liver which otherwise gradually destroyed its function and led to death of the animal. We have so far not felt justified in reducing the fat of the tuberculous diabetic below 90 grams and in many cases have given from 100 to 150 grams in order to secure adequate calories.

c) *Calcium in diet.* Decalcification of the tissues has repeatedly been proposed as an etiologic factor in the development of tuberculosis. In diabetics loss of calcium occurs during periods of acidosis and diarrhea. The diabetic diet, if milk, cheese and dairy products are restricted, may be deficient in calcium. A deficiency in calcification of bones of diabetic children was observed in cases not adequately treated with insulin, as well as in older patients, according to Morrison and Bogan[27]. Therefore, it seems rational to consider the possibility that calcium therapy, at least in the form of a diet planned to contain a minimum of one gram of calcium a day, may be beneficial. A glass of milk and an ounce of cheese add 0.4 gram cal-

cium to the diet, which may be assumed to contain the remaining 0.6 gram calcium required.

d) *Restriction of Salt.* The most recent innovation in dietary treatment of tuberculosis is the salt restricted diet advocated by Herrmannsdorfer, Gerson and Sauerbruch[28].

Favorable results from such a diet have been reported especially in the skin lesions of tuberculosis, and foci in the mouth, palate and pharynx, as well as in exudative processes generally. Grote comments on its usefulness in treatment of carbuncles, edema, etc. Case No. 11023, male, aged 32 years at onset of diabetes in 1930, had an extensive pneumonic tuberculosis in both upper lungs. The salt-free diet was used for a brief period at the Deaconess Hospital in May, 1932. He was transferred to a sanatorium and was somewhat improved in January, 1933. No conclusions can fairly be drawn from our limited experience.

3) *Acidosis and Coma.* Coma and tuberculosis frequently occur in the same patient, contrary to the old idea that coma was rare in the tuberculous diabetic. Hirsch-Kauffmann[29] describes the development of tuberculosis in a 16 year old girl who had coma more than once. Labbé[30] et al. describes a woman whose diabetes began in pregnancy at 21 years of age. After two attacks of coma pulmonary tuberculosis involved both lungs requiring double pneumothorax. Rosenberg's[31] case also treated by pneumothorax, after diabetes of 20 years' duration developed a fresh exudative process. Acidosis was severe, as indicated by urinary ammonia of five grams and beta-oxybutyric acid of 22 grams. Most striking is Bertram's[32] statement from Munich that seven out of 13 deaths following recovery from coma and discharge from the hospital were due to pulmonary tuberculosis. Among 76 cases treated at the New England Deaconess Hospital with coma so severe as to be accompanied by a lowering of the plasma CO_2 combining power below 20 volumes per cent, six or eight per cent developed active pulmonary tuberculosis within three years. These cases left the hospital prior to Feb. 1, 1929. In later coma series, sufficient time has not elapsed to allow a statement. The above does not fairly represent the frequency of acidosis and tuberculosis in the same patient. In addition to 21 cases of coma and pre-coma observed at the Deaconess Hospital who later developed tuberculosis, 16 cases had coma at home or in other hospitals. Thus among our 245 cases of pulmonary tuberculosis 37 or 15 per cent are known to have had coma. In ten cases coma was terminal. Ten per cent of 500 living non-tuberculous diabetic children have had coma at the Deaconess to which may be added an unknown number who may have had coma at home. This comparison is not entirely fair since many of our 245 tuberculous cases lived in the period before the discovery of insulin but it emphasizes the fact of the frequency of acidosis in tuberculous diabetics. Case Nos. 2448, 2687, 4232 and 6287 had coma repeatedly at the Deaconess and Case No. 4287 twice at another hospital. In only three of the 21 cases was family exposure known. In 11 instances the sputum was known to contain tubercle bacilli. In five cases dying from tuberculosis we do not have positive data as to the sputum. Case No. 4232 spent two years in a state sanatorium with healing of a cavity. Case No. 6287 (Fig. 1, Chap. III, *New. Eng. J. Med.*, Jan. 18, 1934) had a minimal lesion without sputum. Case No. 8435 is also alive without a positive sputum. Two others died of coma and carcinoma respectively without a positive sputum. The types of tuberculosis varied. In Case Nos. 2448, 3143, 4763, 5932 and 7486 the roentgenograms indicated pneumonic processes with death following in two cases within a short period. Case Nos. 4232 (Figs. 6, 7 and 8, Chap. III, *New. Eng. J. Med.*, Jan. 18, 1934), 4763, 3775 and 7486 with cavitation did extremely well. Case No. 3775 gained 20 pounds in weight with partial healing of the cavity but died five years later probably of the tuberculosis although myocardial failure was a contributing factor. Case No. 2687 after repeated attacks of acidosis, developed a grippe-like illness which after a period was proved to be miliary tuberculosis. Case Nos. 11006 and 6287 developed soft minimal lesions which in the case of 6287 apparently healed after six months in a sanatorium. Unfortunately after eight months at home with diabetes uncontrolled, in May, 1933, x-ray shows extension and she now has fever and a cough.

Chemistry of the Blood. The average blood sugar on the first day of acidosis in 34 analyses was 0.41 per cent, whereas the average blood sugar in the last 42 cases of coma at the Deaconess Hospital averaged 0.47 per cent. Similarly the average plasms CO_2 in 26 cases was 19 volumes per cent in contrast with the average of 12 in 42 non-tuberculous coma cases. The acidosis was less severe in the tuberculous group. Renal function was so seriously disturbed in Case No. 4232 that anuria was present for 24 hours and the non-protein nitrogen of the blood rose to 139 milligrams. In five other cases slight degrees of nitrogen, retention occurred.

The plasma lipids were determined in but few instances. Case No. 2448 had an abnormal increase in lipids in three attacks of coma. In the last, when acidosis was mild, the tuberculosis was far advanced and the plasma cholesterol was but 150 mgs. He developed hypoglycemia overnight with but 40 units of insulin and the plasma cholesterol fell to 90 mgs. the next morning. Case Nos. 4232 and 6511 also had moderate increases in plasma cholesterol during coma.

The average insulin dose in tuberculous coma cases was 130 units as compared with 201 units for 42 non-tuberculous cases.

The cause of death in ten of the 12 fatal cases has been tuberculosis although coma was also present in three. Case No. 6511 died of recurrent carcinoma of the breast. Metastases had almost destroyed the lungs completely. Case No. 4287 died of coma alone.

Coma and Prognosis. The duration of life of this group has been surprising. Case No. 4232 is now in good condition at the age of 25 years with diabetes of 11.3 years' duration. Case No. 7486 is alive in December, 1932 at the age of 37 years with diabetes of 10.9 years' duration and tuberculosis of 4 years' duration. In fact the average duration of life after onset of diabetes in the 13 fatal cases of this group is 6.0 years and of the eight living cases figured to December, 1932 is 6.9 years. With early diagnosis of the tuberculosis and reasonable control of the diabetes, the results might be greatly improved.

4) Remarkable Cases

Case No. 5738. Although under the burden of great responsibilities he has demonstrated the conquest of combined diabetes and pulmonary tuberculosis for at least seven years. In December, 1926 after having diabetes for nine years, pulmonary tuberculosis was discovered. Bed treatment with a diabetic nurse was carried out for three months, the tuberculosis being under the care of Dr. James A. Miller. The sputum did not become negative for tubercle bacilli until June 25, 1929, but it has remained free from bacilli since that time. In figure 1 is shown the first roentgenogram and table 2 summarizes briefly his diabetic record. Later x-ray reports made available through the kindness of Dr. Miller are as follows:—

"The films dated December 6, 1928 show the area in the upper portion of the right lung to be considerably smaller than on the first group of films described. This would indicate that there has been a gradual contraction in this area probably due to scar tissue. The fact that the circumscribed hazy area described on the right side just below the level of the seventh rib posteriorly has become more sharply outlined also is evidence of favorable progress. There is no evidence of cavitation in the left lung except on the first film."

July 16, 1929. Cavity in right upper lobe has shrunken definitely.

The patient has gained 42 pounds in six years and the insulin has been increased from 15 to 50 units. Diet and urinary tests have been under the constant care of a diabetic nurse who has made reports regularly. As his weight has increased, the fat in his diet has been decreased. In June, 1933 his condition is at the optimum for recent years.

Juvenile Diabetes and Tuberculosis.

Case No. 2274, until he was five years of age, lived with his grandfather, who died of pulmonary tuberculosis. Diabetes began the next year and insulin treatment was started two years later. Four years later at the age of 12 years, extensive pulmonary

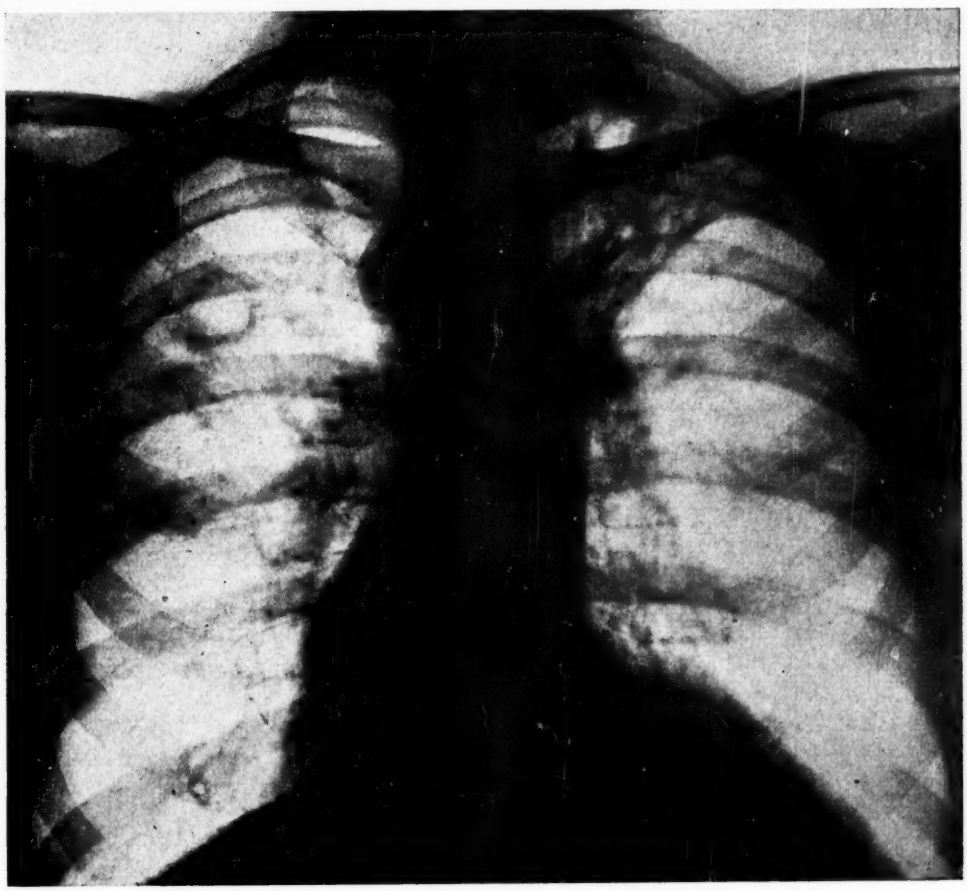

FIG. 1. Case No. 5738. Onset of diabetes July, 1917, at age of 42 years. Pulmonary tuberculosis at 51 years. Cavity in left upper lobe. Involvement of upper third of right lung.

TABLE 2

CASE No. 5738. Age at onset of diabetes 42.4 yrs. Date July 1917. Age at onset of tuberculosis 51 yrs. Maximum wt. 162 net.

Date	Weight Lbs.	Diet C	P	F	Cals.	Insulin	Blood Sugar Per Cent	Urine Sugar	Diac.	Notes
1924										
Sept. 1								3.0		
1926										
May							0.18	0.7		
Dec.	122	96	68	144	1960	15	0.17F	0.2	0	Began insulin. X-rays. Sputum positive.
1927										
May 30	140	165	68	130	2102	18	0.15	0	0	
Oct. 3	142	180	75	115	2055	15	0.14	0	0	Cough 1½ tsp. red
Nov. 15	145	177	75	110	1998	19		0	0	blood.
1929										
Feb. 26	136	160	75	90	1750	32		tr.		
Oct. 15	150	148	64	100	1799	32	0.15	0	0	No râles.
1930										
Sept.	160	154	68	95	1700	43		0.1	0	Urinary nitrogen 7.9 Gm. Working at office.
1931										
Dec. 20	164	160	75	70	1570	50		0.7	0	Working at office.
1933										
May 26	163					50	0.22			No cough.

tuberculosis was found. In Table 3 it is seen that in four years ending July 14, 1931 he gained 24 pounds and grew nine inches. Figure 9 (Chap. III, *New Eng. J. M.*, Jan. 18, 1934) shows the roentgenogram of July, 1931. The carbohydrate of his diet has been increased steadily as well as the insulin. He has lived at home under the care of Dr. Emery of Portland, Maine.

Juvenile Tuberculosis and Diabetes Developing Later.

CASE No. 10163, female, developed pulmonary tuberculosis in 1911 at 15 years. In 1918 at the Massachusetts General Hospital diabetes was discovered when she had a miscarriage. In 1922 at the Boston Hospital for consumptives multiple cavities were pres-

TABLE 3

CASE No. 2274. Age at onset of D. M. 6 yrs. Date January, 1921. Age at onset of tuberculosis 12 yrs.

Date	Weight Lbs.	Diet C Gm.	P Gm.	F Gm.	Cals.	Insulin Units	B. S. Per Cent	Urine Sugar	Diac.	Notes
1921										
July 12	41	70	70	47	993			tr.		Ht. 4 ft.
1923										
May	46	59	48	86	1202	5		0.2	0	
1925										
July	69					20		0		
1927										
April	69	70	67	80	1268	32		4.0		Ht. 4 ft. 6 in. X-ray. Tbc. both apices right middle and left lower lobes.
1928										
Aug. 6	75	88	70	97	1503	35	0.25	0.8	0	Ht. 4 ft. 8 in.
1929										
June		101	66	98	1550	36				Pulmonary hemorrhage.
1931										
July 14	93	140	81	102	1802	54	0.10	0	0	X-ray atelectasis of left lung. Upper half lung —old chronic tuberculosis. Ht. 5 ft. 3 in.

ent, and the sputum was positive. Insulin was begun in 1924 at the Deaconess Hospital with 30 units daily. Roentgenogram taken September, 1930 is shown in figure 2. In 1933 she now coughs very

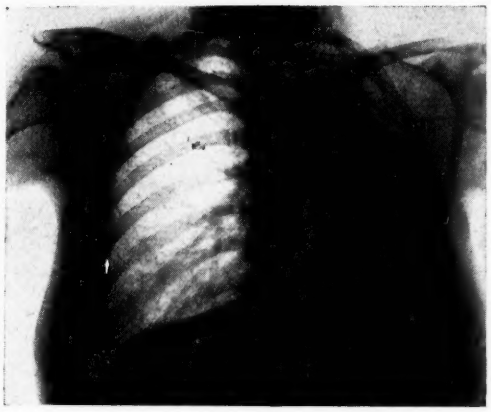

FIG. 2. Case 10163, F. Aged 34.8 years June, 1931. Pulmonary tuberculosis began at 15 years, when she spent three years in a sanatorium. Onset of diabetes at age of 22 years. Multiple cavities and a positive sputum during treatment at Boston Hospital at Mattapan at age of 26 years. Does own housework in 1933.

little, looks extremely well and does her own housework.

Diabetes of Long Duration and Quiescent Tuberculosis.

The record of CASE No. 1257 represents a régime faithfully carried out by a patient who had active pulmonary tuberculosis at the age of 30 years, with occasional mild recrudescences in later years, survived 25 years of diabetes and died at the age of 70 with coronary thrombosis and a perforated duodenal ulcer. Insulin was begun in 1923 and continued to the end. Her diet provided 30 calories per kilogram and she gained 14 pounds during the last five years of her life. At autopsy apical tuberculosis was practically healed.

TREATMENT OF TUBERCULOSIS. GENERAL CONSIDERATION. The treatment of the tuberculous process in a diabetic patient should be governed by consideration of the same principles as in a non-diabetic, adjusted however, to the fact that the diabetic in general is more susceptible to a breakdown if the diabetes is not under constant control, has a lower resistance and therefore should in case of doubt be given the most conservative advice.

The greatest advance in the treatment of tuberculosis has been due to an increasing appreciation of the rôle of rest in bed. The value of rest in quieting the symptoms of tuberculosis is now generally recognized, but if the process is to remain arrested, a prolonged period must be allowed for almost complete healing to take place.

The diagnosis of pulmonary tuberculosis in a diabetic is usually made so late in the course of the disease that exposure of other members of the family and the existence of active disease in the family are highly probable. As physicians our duty to the family has just begun when the diagnosis in one member is made. Thorough examinations of every other member, including an x-ray, are indicated. In six out of ten diabetic children family contact was known. In Case No. 5932 the father, mother and five brothers and sisters were negative to examination and x-ray, but the boy's employer was found to have tubercle bacilli in his sputum!

a) *Sanatorium vs. Home.* For the diabetic patient the problem of home treatment versus institutional treatment seems a difficult one. Sanatorium treatment in the past has frequently not been urged because the diagnosis of pulmonary tuberculosis has so generally been made when the disease had reached a terminal stage. The physician under those circumstances has frequently yielded to the desires of the patient to die at home in spite of the danger to other members of the family. In only a minority of cases will home treatment be effective. Taking the cure is like finding "a way of life" and that way is particularly hard for the patient to follow at home. If there is nothing more to the treatment than bed-rest, reasons the patient, he might better be at home. If he has a good home, that might be true but the point he overlooks is that, in addition to bed-rest, there are details one learns from physicians, nurses, and other patients, the force of example, and common routine. A period of quiet and of relative isolation helps the patient to regain his composure, after having been upset by the news that he has tuberculosis. He needs freedom from disturbance by family, friends and business. In the diabetic even more than in the non-diabetic the mental comfort and confidence of the patient are of great importance. The news that tuberculosis has developed often comes to the diabetic who has struggled for so long with a chronic disease like a final blow. In order to provide relief from the suffering which this knowledge brings and to bring him into such a frame of mind as will be conducive to carrying out a successful period of sanatorium treatment, most serious and sympathetic consideration must be given to his problem. The most cheering fact is that sanatorium treatment has so greatly improved the duration of life and comfort of the tuberculous patient. Dublin[83] points out that the end results of sanatorium treatment are similar no matter what the location of the institution. The results of the best sanatoria show that among their graduates, that is patients discharged as arrested or improved, the mortality is from two to three times the normal for age. Those in a moderately advanced stage of the disease have a mortality eight to ten times the normal for age. Tuberculous individuals as a whole have mortality 14 to 15 times the normal for age. Sanatoria therefore convert incipient cases into a group dying at the rate of only two to three times normal, mod-

erate cases to a group with eight to ten times normal mortality instead of 14 times normal. Never before have so many diabetics been treated in sanatoria. In 1932, at one of the Connecticut State Sanatoria, Uncas-on-Thames[34], eight cases were under treatment at one time. McKean[62] has studied 73 cases from the Herman Kiefer Hospital, Detroit, for periods from 6 months to 4.5 years. In January, 1934, fifty are still living, of whom 21 are still in the institution. In 23 the tuberculosis had become inactive.

We recommend sanatorium treatment immediately for any diabetic patient with active pulmonary tuberculosis and believe that the improved duration of life of certain cases during the last ten years has been due to the greater frequency with which sanatorium treatment has been accepted as well as to the help given by insulin.

Treatment of patients, who present definite evidences of pulmonary tuberculosis by x-ray but no history of any illness to explain it, consists of careful watching with repetition of the x-rays at intervals, but no restriction of their activities except the maintenance of good hygiene. Nutrition must be maintained by a diet sufficient in calories and with insulin dosage sufficient to control glycosuria and to maintain body weight and strength.

b) *Collapse Therapy.* The use of artificial pneumothorax in diabetic cases has increased rapidly. Villaret et al[35] describe a boy of 17 years whose first symptoms of tuberculosis began insidiously. At 18 years of age he entered the hospital with acidosis. Cavities were present in the left lung and the sputum was positive. He received insulin 75 to 140 units a day. Pneumothorax was performed in June, 1926. One year later he had gained 18 pounds and was free from fever. In December, 1928 he had severe acidosis and required from 280 to 310 units of insulin a day. The sputum was free from tubercle bacilli. He was then given treatment with double thiosulphate gold and sodium with unfavorable results. He lost weight. Tubercle bacilli returned in the sputum. This case illustrates the increasing doses of insulin required with an advancing case of tuberculosis.

Labbé[36] reported two cases observed for three years and one observed for four years. In the last case the patient had diabetic coma three different times and three times presented acute pulmonary symptoms. With the pneumothorax on the left side and a phrenicectomy she was able to lead a nearly normal life at the time of the report in December, 1930.

Le Noir and Scherrer[37] have described a juvenile diabetic in whom healing occurred under treatment with insulin and pneumothorax. Their boy was 19 years of age and had a positive sputum. His mother was tuberculous. Pneumothorax was performed in 1926. In December, 1928 he was taking 140-300 units daily and weighed 140 pounds. He had had one cataract which disappeared. The pneumothorax was still maintained and he had received a total of 132,000 units of insulin.

Hart and Creel[38] describe a case in whom artificial pneumothorax performed in 1919, was followed by hydropneumothorax and one year later by empyema. Under treatment by instillation of gentian violet, he improved. However, in 1923 the sputum contained tubercle bacilli, three cavities were present and in March, 1923, he required 278 units for recovery from coma. Jacobson[39] describes two sisters with pulmonary tuberculosis and diabetes, both treated by pneumothorax, an outstanding example of the effects of heredity and contagion. Roles'[40] case, an army officer, 30 years of age, also hereditary, had a lesion under the right clavicle of the "früh infiltrat" type. Pneumothorax gave improvement.

Geer's[41] case required an emergency pneumothorax to control severe recurring hemoptysis. The hemorrhages ceased after the third filling. Diabetes had been discovered only five months after onset of tuberculosis.

Blum[42], Dorendorf[43], Bernard and Salomon[44], Curschmann[45], and Ameuille[46] describe patients in whom treatment by diet and pneumothorax has given good results.

Several of our cases have had treatment with pneumothorax or thoracoplasty which, however, was performed in tuberculosis sanatoria. Case No. 8922 under treatment at the Essex County Sanatorium had received six injections of air and in July, 1931 at the age of 27 years was free from fever, had no sputum. In January, 1933, the diabetes was in such excellent condition that she had been able to omit insulin and taken an unlimited diet.

Arrest: On account of its latency and the comparative freedom of symptoms when a patient is at rest the determination of arrest or healing may be most difficult. The lack of constitutional symptoms should receive little consideration. Physical signs, especially râles, are of little value in determining progression and retrogression of a tuberculous lesion. There is increasing agreement that the Roentgen ray must be considered the main reliance in determining an arrest or a healed lesion. When, by the comparison of serial roentgenograms at quarterly intervals, a lesion is found hard and fibrosed, and it has remained stable for six months, Fales[47] considers that an arrest has been attained, provided an additional six months is passed with carefully graduated exercise and observation without reactivation of the disease.

The diabetics studied routinely at the Deaconess Hospital have shown calcified primary tuberculosis in 75 per cent of the cases. The incidence of old healed apical tuberculosis, indi-

cated by scars, fibrous strands and calcification, is rather low, suggesting that when re-infection occurs in a diabetic it is apt to go on to an acute form with fatal ending or into a chronic but not arrested form. Exceptions are frequent. It is clear that diabetes in no sense renders arrest and healing impossible. Their apparent infrequency teaches the importance of discovering tuberculosis early and giving adequate treatment in the stage where a real arrest may be expected.

d) *Occupation.* The occupation of the diabetic must be carefully chosen. Nursing is out of the question for the diabetic girl because it is too strenuous as well as almost certainly exposing her to the contagion of tuberculosis. Similarly it is doubtful whether the study of medicine should be pursued by a diabetic. An outdoor occupation and one which provides sufficient opportunity for extra rest when needed is desirable. A diabetic needs exercise.

B. PROGNOSIS. The prognosis for the diabetic patient with tuberculosis was considered practically hopeless before the use of insulin. It must be remembered, however, that all statements in the past have been based upon tuberculosis discovered in an advanced state. *One rarely finds in the tremendous literature on the association of these diseases records indicating that tuberculosis has been recognized in an incipient stage in a diabetic.* Grillo[61] recently referred to three incipient cases in New Haven. At present prognosis is distinctly improved by the efficiency of insulin and modern dietary treatment in preventing deaths from coma and in maintaining better nutrition. An additional factor is the use in properly selected groups of surgical procedures such as collapse therapy.

The hope for the future of diabetic tuberculosis lies in earlier diagnosis. Emerson[48] points out that in New York City one-half of the cases of active tuberculosis are not known and 29 per cent are not reported until within one week of death, and 53 per cent are under no kind of real supervision. Among our 245 diabetics, 25 cases (10.2 per cent) died within two months of the diagnosis. In only ten cases (4 per cent) have we discovered the disease while the lesion was still minimal. These facts serve merely to emphasize the tardiness of diagnosis.

The delay in the diagnosis of tuberculosis is not to be charged solely to delay on the part of physicians. Williams and Hill[49], studying a series of 1499 non-diabetic patients found that 24 per cent waited from one to 20 years after the first symptom before consulting a physician and only one in three consulted his doctor within a month after symptoms began. Only 12 per cent of this series were classified as minimal on admission to the sanatorium. This percentage is still three times as great as among our diabetics.

Delays on the part of physicians in making the diagnosis of tuberculosis among diabetics are probably greater than Williams and Hill reported for non-diabetic tuberculosis. In their series at least 43 per cent were diagnosed tuberculous within a month of the first visit. A discouraging fact is brought out in table 4. The duration of tuberculosis in fatal cases appears no greater in the later period than in the earlier period although the duration of the diabetes has doubled. This means that the diagnosis of tuberculosis is not being made any earlier. It is fair to say that in the past, because the combination appeared so hopeless to the physician, often the patient was treated without being told that he had tuberculosis.

The favorable course of cases diagnosed early is best illustrated by the juvenile cases. Of this group three have lived from five to ten years after active pulmonary tuberculosis was discovered. Two deaths occurred after diabetes of ten years' duration. In Case Nos. 4232 and 2179 large cavities have healed. Case No. 6287 has shown healing of a subclavicular lesion. Similarly Wessler and Hennell[50] report from New York City eight cases of diabetes and pulmonary tuberculosis, in seven of whom cavities healed during observation. These cases clearly prove that early diagnosis will result in astonishingly favorable results in diabetics as well as in non-diabetics.

TABLE 4

DURATION OF DIABETES AND PULMONARY TUBERCULOSIS IN 160 FATAL CASES

Period	Number of Cases	Diabetes Years	Tuberculosis Years	Total Diabetic Deaths	Per Cent Tuberculosis
1898-1914, Aug. 7	18	5.6	2.2	342	4.7
1914-1922, Aug. 7	46	4.9	3.3	805	5.7
1922-1931	96	7.6	3.0	1503	6.6

1) EFFECT OF INSULIN UPON PROGNOSIS. Fatal cases treated with insulin lived 8.9 years and those treated without insulin lived 5.9 years after onset of diabetes. Among the insulin-treated cases alive in 1933, active pulmonary tuberculosis has been present in 18 patients for more than 5 years, the average being 9.0 years. The prognosis for pulmonary tuberculosis in a diabetic may be better than in a non-diabetic.

In table 4 it appears that pulmonary tuberculosis is more frequent now than before the discovery of insulin. In fact, the figures probably err in not giving the full number of tuberculous patients because relatively so many more tuberculous patients survive the disease for long periods than was true in the period before 1922.

The important fact, however, is that on the average diabetic patients before 1922 lived only half as long as they do now and died so much more often with coma. The added years of living increase the chances of contact with active cases and therefore of re-infection. The chances of contact with active cases are multiplied by another factor, namely that the diabetic patient of today is by virtue of insulin treatment, vigorous, active and taking a part in the life of his community so that his opportunities for contact are greater than were those of his diabetic ancestor who hugged the fireside and ceased to take an active part in community life shortly after his diabetes began. The prognosis for the development of tuberculosis by diabetic patients is evidently much worse in the out-patient clinics of the great European cities than it is in the United States. Labbé[51] in reporting a year's observation of diabetes in Paris notes that 24.3 per cent of the 37 deaths were due to pulmonary tuberculosis.

In the next few years tuberculosis as a complication of diabetes will be seen more frequently. More frequent use of x-rays with earlier diagnosis, general prolongation of life and the increasing incidence of diabetes in the community may outweigh the importance of improved diabetic treatment, and the reduction of contacts in the community brought about by the falling death rate and the more frequent hospitalization of active cases of pulmonary tuberculosis.

2) *Prognosis as Affected by Advanced Stage of the Tuberculosis.* From table 4 it appears that the lack of improvement in the average duration of the pulmonary tuberculosis may be explained in two ways. Since 1922 better diabetic treatment may simply have postponed the onset of tuberculosis. If it be true, then better diabetic treatment should also prolong the course of the tuberculosis. This certainly seems true in a number of cases, yet the average duration shows an increase only from 2.2 to 3.0 years. The second explanation for the constancy in duration of life after onset of tuberculosis is that the diagnosis of tuberculosis is still made in the vast majority of cases when the condition is well advanced and the prognosis is then relatively little affected by the use of insulin.

A comparison with other diabetic series shows how quickly fatal a complication tuberculosis has been. Among Fitz'[52] cases 63 per cent died within a year of diagnosis. Twenty-three per cent lived only from one to three years and 13 per cent lived for three years. Of Banyai's[53] 31 cases ten died in the sanatorium, ten were unimproved by treatment, five improved, two became quiescent, and four were apparently arrested. Wassmund[54] analyzed 60 cases occurring among 8,000 sanatorium patients. In 90 days he noted that the diabetes improved in 48 per cent, but became worse in 23 per cent. However, the tuberculosis improved in 72 per cent of his cases. None, however, became capable of full-time work and only 38 per cent were able to do a limited amount of work. His cases were severe cases; 37 per cent were progressive, 12 died during treatment, three of coma, four of hemoptysis, two of tuberculous meningitis, and two of gangrene of the lung.

3) X-Ray Findings and Prognosis. Calcified tracheobronchial nodes in children indicate severe infection in the past. Usually they mean close contact with an open case. Diabetic children with calcified glands must be separated from contact with an open case and must live under conditions which will provide for adequate rest and diet. They probably should have x-ray films repeated at the thirteenth and sixteenth years. Among our 286 diabetics 42 per cent in the first decade and 74 per cent in the second decade studied by x-ray have had calcified tracheobronchial glands and from this group have already developed four cases of parenchymal tuberculosis.

The finding of calcified glands or calcified areas in the parenchyma, indicating areas of tuberculous infection which have undergone healing is sometimes interpreted as advantageous to the patient. It is easy to stress the immunity conferred by a primary infection which apparently is healed, but the degree and duration of such immunity are, to say the least, uncertain. How much immunity is acquired with the development of allergy is entirely unknown. Whether such immunity is of less or greater importance than the native defensive factors of the individual cannot be determined. So far in no diabetic have we found active tuberculosis without such areas of calcification. If these earlier infections acted solely in a protective manner and never as foci of later activity, some cases without such evidences of old foci should occur.

Dense pleural thickening, whether widespread over the lower lobes or localized in the interlobar fissure, suggests tuberculous infection and may precede or accompany tuberculous infiltration. Thus Case No. 4045, a physician, aged 61 years, in August, 1924 had dense pleural thickening over the lower half of the left lung with an old area of calcification in the parenchyma. Within six weeks he developed miliary tuberculosis and died. On the other hand, the slight sharp interlobar lines between the right middle and upper lobes are easily seen and frequently have little significance even in childhood. McPhedran[55] says that in white children dense

pleural thickening associated with even diffuse tuberculous infiltration may clear up rapidly and leave no trace.

Atelectasis has occurred in a few of the diabetics, notably Case Nos. 2274 (See fig. 9, Chap. III, *New. Eng. J. Med.*, Jan. 18, 1934) and 10163. The collapse of the lung with a displacement of the mediastinum appears more menacing than it really is because as Stivelman[56] recently noted, atelectasis is often produced by a rather minor lesion and has a correspondingly favorable prognosis.

Other Factors. Age affects the prognosis materially. In the young, tardy diagnosis results in short duration of life. Arteriosclerotic complications affected the course in the 49 cases with onset of diabetes after the age of 60 years. The average duration of life after onset of diabetes in 36 fatal cases in the latter group was 8.0 years. Case No. 8643 was omitted from this average because of exceptional duration of diabetes, which would have increased the duration of the group to 9.3 years. The average duration of the tuberculosis in this group was less than one year. Analysis of their records showed these were not cases of acute tuberculosis, but represented terminal stages of chronic tuberculosis.

Sex appears of unexpected importance. Three-fourths of all our cases in this series were males. The type of onset helps but little. In general cases which have begun most stormily with high fever, toxemia and extensive lesions have had the worst prognosis. Cases with more insidious onset have done more favorably. Case No. 6627, male, aged 19 years at discovery of tuberculosis had a most insidious onset and yet progressed rapidly to death within two years. Undoubtedly the most important factor in prognosis is the stage of the tuberculosis at the time it is discovered. Cases with small lesions localized, who can be given adequate treatment with rest in bed for a period of months and who are carefully followed both with respect to the diabetic and tuberculosis régime, do well. Case No. 4845 developed tuberculosis at the age of 25, spent a year in a sanatorium, diabetes developed at the age of 51 years. In 1928 she had a fresh minimal lesion which however, has made little or no progress. In December, 1932 she writes that she is in good health.

The severity of the diabetes is most difficult to evaluate as a factor in prognosis. Certainly cases not controlled by adequate treatment are more likely to develop tuberculosis as indicated by the incidence of tuberculosis in coma cases. Rosenberg and Wolff noted that only three of their 40 cases developed tuberculosis during well-managed insulin treatment. I can only recall two such cases, a child, whose mother had tuberculosis, and a woman of 77 years Case No. 1977 who developed tuberculosis while under observation in a hospital for nearly two years prior to death. Severe cases, requiring 50 units of insulin or more daily may do well as illustrated by Case Nos. 4763 and 5932. Sansum[57] reported three cases receiving 96, 105 and 134 units of insulin daily who improved markedly in spite of extensive tuberculosis. Three of Nadler's[58] six cases became quiescent. Even after the development of progressive tuberculosis nearly all diabetics, if carefully treated, may become mild.

C) PREVENTION

1) Avoidance of contact with open cases of tuberculosis must be brought about by the discovery and isolation of such cases in the family of diabetic patients.

2) Good hygiene must include adequate rest, fresh air, outdoor life so far as possible, regular exercise, and pasteurized milk. Summer camps are of great value for diabetic children. In the summer of 1932, 92 diabetic children spent from two to eight weeks in four camps in New England. With specially trained diabetic nurses and medical supervision, they were able to reduce the insulin dose and to increase their diets indicating improvement in the diabetes. Children with positive skin tests and calcified glands, who form the majority of the diabetic children in the second decade of life especially need such opportunities.

3) Early use of insulin, an adequate diet and constant control of the diabetes are fundamental in maintaining the best nutrition and resistance.

4) More frequent examination of the lungs by x-ray is necessary in order that early tuberculous lesions may be discovered when adequate treatment will permit healing to occur. In children with known contact and positive skin tests x-rays should be repeated at the thirteenth, sixteenth and twentieth years.

5) The use of anti-tuberculosis vaccination is at present in an experimental stage. At some time it may prove valuable to the diabetic.

CHAPTER IV

Summary

1) In order to promote good nutrition and resistance to tuberculosis, the use of insulin should be begun immediately in all youthful diabetics.

2) Considering age, weight and diet the tuberculous diabetic required about the same insulin dose as the non-tuberculous case. The average daily dose in 18 cases of tuberculosis and diabetes at the Deaconess Hospital between the ages of 15 and 29 years was 39 units.

3) Serious hypoglycemia must be guarded against by the cautious use of insulin in severely ill, or emaciated tuberculous diabetics.

4) Sixty-nine fatal cases of tuberculosis and

diabetes treated with insulin lived 8.6 years, whereas, 90 fatal cases treated without insulin lived only 5.4 years after onset of diabetes.

5) The last ten cases of active tuberculosis and diabetes with fever at the Deaconess Hospital received an average diet of carbohydrate 157 grams, protein 83 grams, fat 116 grams, calories 2004 and insulin 42 units.

6) Twenty-one cases of acidosis and coma later developing tuberculosis are described. Coma cases should be followed up yearly by x-ray examination for the detection of developing tuberculosis.

7) Three cases remarkable for long duration of diabetes and advanced tuberculosis are described. Eighteen cases alive in 1933 have survived active pulmonary tuberculosis for an average of 9.0 years.

8) The recognition of pulmonary tuberculosis in a truly incipient stage in a diabetic is almost unknown in the literature. Ten cases occur among 245 in this series.

9) Prognosis for the tuberculous diabetic depends upon earlier diagnosis of the tuberculosis by more frequent physical and x-ray examination.

10) Advantages of sanatorium treatment and the use of collapse therapy are summarized.

11) The modern prolongation of life of the diabetic and his greater entrance into general activities expose him to tuberculosis and may result in a greater incidence of tuberculosis among diabetics.

12) Lack of control of the diabetes increases the chance of developing tuberculosis, as indicated by the frequent development of tuberculosis in cases who have had coma.

13) Preventive measures include early aggressive diabetic treatment, and good hygiene.

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THE APPLICATION OF PSYCHOANALYTIC CONCEPTS TO GENERAL PSYCHOTHERAPY

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SOME thirty years ago, Professor Sigmund Freud originated a method for investigation of the human mind which made it possible for science to cross hitherto impassable barriers. Before the work of Freud and a few of his contemporaries who share his honors, the scientific world was in touch only with that conscious part of the mind of man which has now proved to be little more than the imposing façade to a vast mental edifice.

In the past, the majority of investigators were satisfied that this façade sufficiently revealed the main structure. Others, more curious, gazed into the dim shadows and speculated on what hidden chambers might lie beyond. The helplessness of science did not mean that this field was wholly untouched. The intuitive powers of the specially gifted among men, outstandingly the poets, were responsible for deep but sporadic penetrations. The results, however, could only be expressed in the language of art, which lacks that objectivity required for science. Similar inadequacies applied to the theoretical constructions of the philosophers who, in their own fashion, attempted to reveal this obscure region.

The so-called scientific method for the investigation of phenomena, with its strict objectivity, has brilliantly justified itself through the knowledge and control it has given of the physical universe. Naturally, it has been jealously guarded against any modifications which might savor of the superstition and inaccuracies of the prescientific age. In the method called psychoanalysis, Freud retained the objective approach, but the nature of his particular field of interest did not permit mathematical accuracy or experimental verification. He therefore made some radical departures in research procedure which brought his whole system under immediate suspicion by the scientific world. It is fair to say that in the years since its birth, the Freudian method has gradually emancipated itself from charges of heresy, and in its own domain has become increasingly acceptable to science.

The results which have come about through the use of the Freudian method mark as sharp a distinction between old and new knowledge of the mind as that which took place in the knowledge of the body following the discovery of the microscope. Psychoanalysis has made possible a kind of psychic histology of the mind to supplement the gross anatomy of the pre-Freudian period. The vast mental regions which lie outside of consciousness have been discovered and, in part, explored. These regions of the unconscious mind are inaccessible to the direct approach which, before psychoanalysis, was the only road which science considered useful or even respectable.

The psychoanalytic method has developed in two directions: first, and most important, it is a means of research into matters of the mind and has resulted in a growing body of data empirically obtained; secondly, for certain mental pathologies, it offers a means of therapy which holds the unique position of being a practical application of research itself, that is, the self-knowledge gained by the subject from these psychoanalytic studies carries high potentials for self-cure. As a method of research, psychoanalysis has wide application in medicine and other fields. As a method of therapy it is more restricted, and applies chiefly to a selected group of psychoneuroses. Psychoanalysis has been called the major surgery of psychotherapy, and in many ways the analogy holds good. Like surgery, it is often a method of choice for conditions not modifiable by more simple methods. Like surgery, it is neither necessary nor desirable for general application. Like surgery, again, it is limited in its scope and cannot do the impossible.

This major surgery of the mind must obviously be done by those specially trained in its technique, but psychotherapy in general plays too large a part in medical treatment ever to be monopolized by specialists, psychoanalytic or otherwise. The majority of such work will always be done by practitioners in every field, with the family physician in the lead. The logic of medical progress demands that with the new knowledge of mind made possible by psychoanalysis this therapy be employed by the physician with new understanding and skill. His intuitive art, which has been a chief resource in the past, can now be reorganized and extended by the acquirement of a more standardized technique. In psychotherapy history may well repeat itself. The physician of old had a small stock of knowledge about the human body and supplemented this with an intuitive skill often far-reaching in its scope. The rapid development of medical knowledge in the past century resulted in increasingly specific methods of treatment which must be learned by technical training and can never be attained by the process of intuition. During the period just ahead there may be predicted some similar evolution in the field of psychological medicine. In

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coming generations the physician untrained in the psychotherapy which he practices should be as rare as the one who is unfamiliar with asepsis or who prefers the palm of his hand to a clinical thermometer.

The psychotherapeutic resources of the future are likely to be eclectic ones, varying according to need and opportunity. In spite of some over-enthusiastic claims, psychoanalytic therapy by no means makes obsolete the methods of the past. The psychotherapy that was effective before psychoanalysis was developed remains effective today. Much of former psychotherapy was simply an incidental and automatic accompaniment of some physical therapy and operated in complete obscurity, hidden alike from physician and patient. The preanalytic methods which were used deliberately, so far as they can be classified, are as follows: First, suggestion (both in the waking and hypnotic states), which by various short cuts attempts to substitute ideas of health for those of illness. Secondly, persuasion, which is suggestion supplemented by appeal to the intellect and the powers of logic. Thirdly, reëducation, which is persuasion plus the attempt to give the patient a deeper understanding of his own psyche, and to teach him a better way of life. Fourthly and fifthly, are inspiration and consolation, which explain themselves. Between these different methods there are no hard and fast lines, and fundamentally they all have important features in common*.

A somewhat special variety of psychotherapy is what Janet calls directorship. In directorship, the physician assumes, or better, is given by the patient something of a god-like rôle, so that in any perplexity there is someone to whom he can turn whose strength seems omniscient and judgment infallible. By the aid of such a relationship to a stronger personality in a position of authority, certain dependent personalities can live in peace rather than in turmoil. There are few physicians, or those in other professions, for that matter, who have not among their clientele people who seek them out in any difficulty and are supported by this directorship. As so many of these difficulties concern matters of physical or mental health, the physician is the director par excellence. Certainly this is a legitimate function and the most that can be done for certain patients. However, it should not be too much to ask that the dispenser of directorship deliberately choose this relationship as the best under the circumstances rather than stumble onto it by chance and not be clearly aware of what is going on.

*The immense power for mental healing contained in religious faith should not go unmentioned in a discussion of psychotherapy. It does not, however, come within the province of medicine at the present time. Whatever the future may have in store is unknown, but up to date, it is true that the development of science has taken away from religious healing rather than added to it.

The thesis of this paper is concerned with what eclectic psychotherapy can borrow from psychoanalysis to its advantage, and more specifically, what practical applications can be made of psychoanalytic concepts to the older methods. A brief sketch of present-day psychoanalytic theories of the human personality and the purpose and procedure in psychoanalytic treatment will be useful as an introduction.

Outline of Psychoanalysis

(A) Theoretical Formulations

Psychoanalysis began as an opportunistic method for treating nervous disorders, and incidentally revealed new and important data concerning the mind. On this data as foundation theoretical constructions have been formed, as is legitimate in any scientific discipline. Certain general principles, early discovered by Freud, appear to be fundamental and unchanging, but the theoretical superstructure is not static and will be modified in the future as it has been in the past.

Psychoanalytic psychology takes for its basic postulate that the source of psychic energy is found in certain *drives* or instincts. These instincts mark the dividing line between the biological and the psychological phases of the human organism. They originate in the organic activity of the body, but at one level of their functioning furnish the elemental stuff of the mind. In other words, the psyche of man represents activities, on a special plane, of driving forces which are fundamentally biological in their origin. To avoid confusion and for other pragmatic reasons, psychoanalytic concepts were, at least until recently, kept well within the limits of this psychological plane. The manifestly desirable tie-up of the human organism into a psycho-biological whole was left for the future.

Human instincts in their mental manifestations can be usefully divided into two main groups. First, the sexual, and secondly, the aggressive. The sexual instincts furnish the binding forces in human relations*. From them is derived all love; filial, romantic, family, and social. They tend to form new units and to build up new groups. In sublimated form they are the source of the richest human culture. In general, they are creative and life-giving†. The aggressive instincts are the opposite of the sexual. In pure form they are separating rather than binding, tend to break down rather than build up, are destructive rather than construc-

*The term *sexual* is used by psychoanalysis in a widely extended connotation. If one prefers, for esthetic or other reasons, to use the word love or even social instead of sexual, it will not be incorrect but is less specific when attempting to deal with origin rather than with effects.

†Formerly the so-called self-preservative instincts were considered in a class apart. Through the development of the concept of narcissism (self-love and self-interest), it has become appropriate to include them as one manifestation of the libido or sexual impulses.

tive, and lead toward death. Normal mental functioning is sustained by the balanced activity of this dichotomy of instincts, and the two groups play an equally important part in a constructive adjustment to the outside world.

Both classes of instincts, when operating in elementary form, bring the individual into sharp conflict with the environment, and also are incompatible with each other. Primitive instinct manifests itself as a state of uncomfortable tension, seeks direct discharge without regard to consequence and is highly asocial. The person directed solely by such impulses would not long survive. The goal of psychological development is to divert and modify instinct until there is achieved a relative unification on levels of social adaptation. The primitive, elementary, instinctual organization of the child, through an orderly evolution becomes the matured and unified instinctual organization of the adult. In other words, mental maturity means a socialization of the instincts, and in this process the sexual and the aggressive act upon and modify each other to fuse in various proportions. Thus, in the healthy person, love in all its forms borrows from aggression and thereby becomes a type of self-assertion which brings fulfilment of all instinctual needs. In the same fashion, when the aggressive instincts take a primary position, they are sufficiently sexualized (made loving or socialized) so as to lead away from the purely destructive toward some constructive and useful manifestation of power. In civilized society, there has been a marked subordination, or at least concealment, of the instinctual forces of aggression (hostility) by those that are sexual (loving) in nature. Thus an understanding of the part played in human psychology by the development and vicissitudes of the aggressive instincts has followed somewhat tardily the more complete knowledge of the evolution of the sexual instincts brought together in the so-called *libido theory* of Freud.

However, the mental life is not so simple as all this might imply. Man, at least adult man, is something more than a bundle of instincts however socialized and domesticated they may be. He is also a moral being with a conscience, or what psychoanalysis calls a super-ego. In its beginnings the instinct life is controlled and disciplined by environmental factors, chiefly by the influence of those persons with whom the child is most in contact, usually the parents. Later on he develops something within himself to act as substitute or representative, and the nucleus of the super-ego is made up of an internalization (introjection) of this early human environment. From then on, instinctual evolution is not only the result of the guidance and pressure of the external social code enforced by the parents, but is also affected by an inner personal code, i.e., the super-ego, which takes over more and more responsibility for instinct development and control. The mentally healthy adult has not only organized his instincts to a form adapted to the outside world, but has also constructed a super-ego roughly representative of the social demands of his time. Thus the instinctual life, the driving forces of his psyche, can find a relatively free outlet without too great collision with the physical or social environment or undue conflict with his own super-ego. Free outlet for instincts at socialized levels means the fullest utilization of psychic energy and reacts to the advantage of both the individual and the group.

In the case of the neurotic, the situation is different. Due to causes in large part unknown he has not been able to attain the capacity for free energy discharge, and much is wasted in futile inner struggle. Both development of his instinctual life has been interfered with and super-ego formation has become distorted. Instincts have remained fixed on an elementary, infantile and asocial level. The super-ego is punitive and inhibitory instead of being a guide and ideal. It, also, is infantile and stands for a kind of hypermorality based on exaggerated childish values of fear and guilt rather than on those of adult reality. In relationship to instinct the super-ego acts more as a harsh tyrant than as a sane representative of the social order. In the neurotic, both sides of the psyche claim too much. Undeveloped instincts strive toward elemental and unsuitable expression. The super-ego demands impossible prohibitions and rejections. Insoluble conflict results, and an adjustment is possible only on the basis of a neurotic compromise. This compromise appeases both sides to some degree, but at the expense of sharp limitations to a free mental life. The individual within whose psyche this disturbance has occurred is little aware of what is going on. Under the influence of what is called *repression* by psychoanalysis, both conflict and compromise are deeply unconscious. Repression, by which is meant the automatic elimination of mental material from consciousness, acts as a protective mechanism against a direct facing and acknowledgment of intra-psychic situations which would be unbearable to the conscious ego.

Borrowing once more an analogy from the physical realm, the primary conflict and the resulting compromise in a neurosis are organized so as to become a deep reflex-like structure, self-perpetuating, and quite cut off from any influence by direct volition. The individual is no more able to modify this mental pathology by exercise of his will than he is to affect his heart action or nutrition. The neurotic symptoms of which the patient is conscious are surface manifestations of this deep-lying psychopathology. The patient suffers and longs for relief, wholly unaware that in a sense he has really chosen

the neurosis in order to serve a double purpose. On the one hand, it is a protective scheme against what seem to be unendurable difficulties, on the other, through the outlet furnished by the symptoms, it gives an indirect and disguised satisfaction to repressed instinctual needs. A neurosis, therefore, is an adaptive mechanism for the psychologically handicapped, a way of life developed to meet the world as well as possible for the person with inadequate equipment of instinct and super-ego.

(B) Method of Treatment

Psychoanalytic therapy is a specific method aimed to bring the pathology of neurosis from the unconscious to the conscious mind, as it were, to transfer it from the field of the reflex to that of the volitional. This means lifting the material of conflict near enough to the surface to be influenced by present-day reality represented by the conscious mind. In so doing, adult standards can be brought to bear on issues which previously have been ruled by the distorted values of infantile imagination. Through psychoanalysis there is a second chance for that evolution of instinct and construction of a healthy super-ego (conscience), all of which in a more favorable case would have occurred spontaneously in childhood. In properly chosen cases; blocked, fixated, inhibited instinct has a new opportunity to go on to complete development. At the same time the hypermoral, punitive conscience can be remodelled more in accord with the standards of social reality.

All this is no light task, and can only result from a slow process more analogous to growth than to amputation or grafting. All the mighty forces of the original repression manifest themselves as *resistance* during the treatment. Resistance is the term given to the automatic unconscious barriers which intervene against attempts to become aware of the forces in conflict. Analytic technique is in large part directed to overcome these resistance barriers, and thereby gain access to what lies beyond. Two unique procedures peculiar to psychoanalysis help circumvent the resistances. First, the patient makes use of free-association in his communications; and secondly, the analyst plays a passive rôle.

To carry out free-association is the only obligation the analytic patient is asked to assume. Unless he is willing to accede to this, analysis is out of the question. The rule of free-association requires that, so far as possible, he put into speech everything which comes into mind, without selection or reservation. The ordinary standards of conversation, such as adherence to topic, orderly presentation, and the social conventions and amenities are abrogated. The only criterion of what shall be talked about is what happens to come to mind. This procedure, by widely circuitous routes, leads gradually toward an ever deeper revealing of the unconscious mental life. The oft-heard criticism that so-called free-association is really not free, is quite correct. The term simply expresses the fact that when conscious control of thinking is removed, the associative processes are taken over and motivated by unconscious factors. By working backward from the emotional and ideational material brought out by free-association, the unconscious forces which determine them are isolated from overlying psychic structures and thus can be revealed.

To summarize, free-association refers to that type of thinking which supplements the patient's attempts to fathom his own mind by conscious introspection. The deep self-understanding essential for analytic therapy must come from within, and cannot be transmitted from without. A parallel may be drawn with laboratory work in physics or chemistry, where useful knowledge requires that the individual do the work for himself rather than have it done for him. The region of the unconscious is inaccessible to direct intellectual approach by the individual himself, but by free-association he is able to take up the task where the former method comes to an end.

The passive rôle of the analyst will come up for more detailed discussion later on. Briefly stated, it means that he avoids both the indulgent and authoritative attitudes, one or the other of which the patient has been accustomed to meet in other types of psychotherapy as well as in all the usual relationships of real life. For reasons which will be outlined more clearly subsequently, the analyst limits his activity to interpretations of the mental content brought out by free-association which, by reason of his training and detached position, is in many respects more intelligible to him than to the patient himself, who is tangled in his own repressions and resistances. However, there is nothing infallible about these interpretations and they are not presented as final. If they are correct and given at the opportune time, they stimulate the production through the free-association of new material from the unconscious. If they happen to be incorrect, they fall on stony ground and no such results will follow. Nor does the analyst lose caste with his patient on account of making a false move now and then. The two are working together on an obscure problem with the analyst in the position of ally, rather than that of prophet. A more dogmatic and pedagogic use of the interpretative method made possible by the new psychology of Freud may not be without benefit. However, when so used it is not analysis, but the old suggestion and reëducation under other names and open to similar disadvantages plus some new ones all its own.

By persistent use of these procedures of free-association and passivity, two processes appear in the patient which constitute the dynamics of

the therapy. The first is *remembering,* the second is *reliving.* Remembering means a gradual extension of conscious grasp to the early childhood period, where the basis of the neurosis was laid down. Here the interference and distortion of the instinctual development and super-ego construction occurred and in this form they still remain. This reconstruction of the psychological past life through memory is accomplished partly by breaking through the infantile amnesia, thereby recovering important childhood experiences, partly by revaluation of material retained in memory but isolated from its emotional significance, and still more in other ways such as fantasy, inference and analogy. All this in successful cases means something very different from a mere verbal autobiography. There result a certain inner conviction and realignment of values which lead toward constructive change.

By reliving is meant the actual emotional experience of the analysis itself. This is accomplished through what is called by psychoanalysis the *transference* and will receive later consideration in this paper in its bearing on general psychotherapy as a special therapeutic force. Suffice it to say here that in the transference relation to the analyst, the hidden patterns of the patient's emotional organization, fixated at immature levels, are brought into the light. This repetition of patterns of course does not appear exclusively in analysis, but occurs in the ordinary relationships of real life. There is, however, a striking difference. The general set-up of the analysis is such that the repeating of patterns is far more free from disguise than elsewhere. The passive rôle of the analyst reduces the reality features of the physician-patient relation to a minimum and from behind the barriers which act as a screen in ordinary situations appear the unresolved childish attitudes of the patient which function as fantasy projections toward the person of the analyst. He becomes for the patient a phantom-like composite figure, representing in turn various important people of the early milieu. These primary human relationships furnish the individual's apprenticeship for the business of mental adjustments in the adult world. Such of them as have remained imperfectly solved are reactivated in the analysis with something of their original vigor. Gradually the neurotic individual is able, as it were, to see himself in action with increasing clarity and conviction, until his deep-lying conflicts made up of undeveloped and contradictory needs are spread out before him. By a combination of these two processes, remembering and reliving, the patient, in spite of his resistances, gains continually deeper insight into the defects of his psyche and parallel with this it becomes possible for him, as never before, to bring to bear the influence of his conscious adult mind upon the forces of conflict within him. In an appropriate case the rigors of a punitive super-ego are mitigated and the instinctual life freed from crippling inhibitions, measured in terms of infantile guilt and terror, can make a tardy development toward a normal adulthood.

The subject of the patient-physician emotional relationship should not be dropped without pointing out a final important step in analysis, which is called the resolution of the transference. By this is meant that, before the treatment is successfully over, the patient must understand the significance of the transference relationship and be able and willing to give up the special dependence on the analyst which it implies.

It should by no means be understood that the physician in an analysis takes the part of a non-participating dummy partner. In a subject whose analysis is well under way, two tendencies are evident. One is toward a self-understanding through uncovering the disturbing unconscious material. This represents some normalizing dynamic force, which may be called the "will to health" and which strives to seek out and vanquish the obstacles that stand in the way. The other tendency opposes this, as though such encroachment on secret places would bring danger or rob the individual of something valuable. This is the "will to illness," by which is found a superficial peace and seeming security at the expense of the neurotic compromise. Unsatisfactory as such a compromise may be, it offers something to the patient which makes it appear the lesser of evils, and he holds to his position with great tenacity. The first tendency leads to participation in the constructive purpose of the analysis. The second motivates the resistance. It is as though the individual were divided in his unconscious mind into two opposing factions, between which in the past there was a complete deadlock. In the analysis, the struggle is renewed with the analyst engaged by one side as an ally, and this makes possible a new chance for victory. When the tendency toward the normal is in the ascendancy, the analysis goes on by itself while the physician simply stands by, with occasional interpretations to help make articulate for the patient mental content which seems close to the surface. When resistances have the upper hand it is the physician's part to point them out and thereby weaken their effect. Resistance is motivated from the unconscious and can only operate successfully in disguise. Whenever recognized by the patient, that particular form of its manifestation loses much of its force and in the process of falling back to another line of defense, some ground is gained for the advance.

An analysis may be compared to a spring log drive in the north woods. For periods the logs move steadily on under their own momentum. Then there is a jam which, once formed, is only made stronger as the oncoming logs pile up behind. Natural forces are of no avail. Some outside agency must intervene or the blockade will

be permanent. Here the watchful riverman plays his part and by well-directed attack on the key logs, the whole mass moves on again. So the analyst, watchful in his passivity, strives to break up the deadlocks of opposing forces which occur and reoccur throughout the analysis. To be in a position to play this part, it is necessary that he know what is happening in those hidden mental regions which furnish the scene of activities. It is his task to penetrate so far as possible the drama of the patient's speech and attitudes and see what is going on behind the scenes. It is this knowledge which the patient must have in order to proceed, and which he can never gain by himself. The analyst in his detached position and with his special training is prepared to give aid which is directed solely to this one purpose of helping the patient gain an increased insight into his own psyche. The main work of the analysis is done by the patient. Those forces within him which strive toward health are able to operate as they could not do without the reinforcement of the analysis.

All these psychic processes take place in an obscure realm and are not readily recognized in the disguised form in which they appear in consciousness. Some of the time, the analyst by the application of general theoretical knowledge, is clearly aware of what is going on. Again, he is for a time in a fog as well as the patient. It is then that he must supplement his theoretical and empirical knowledge with a trained intuition, and be satisfied for a time to grope forward in the dark. This intuitive function is called by psychoanalysis *identification*. The analyst when he cannot see clearly in an objective way, tries to follow the processes in the patient's mind by a kind of mirror-like reflection of experience in his own. This identification in psychoanalysis is no different in its nature from that accomplished by poet or artist, or the purely intuitive therapist. It is, however, more readily made conscious, more free from personal bias, and is used for a special purpose. In the analyst, the capacity for identification is to a considerable degree perfected by the introspective knowledge of his own mind gained from his special training, which includes first of all a thorough personal analysis.

Neither the reliving by means of the transference nor the reconstruction of the early life by remembering will alone suffice for analysis. It is the combination which accomplishes the purpose. The patient must move forward, so to speak, first on one front and then on the other, and it is the analyst's task, when an impasse develops in one direction, to shift activities to the other.

Psychoanalysis as a therapy applies specifically to problems of neurosis where the psychopathology is so deeply unconscious that it cannot be effectively modified by other means. More simple methods can help the patient to adjust and to carry on, in spite of his disabilities, and various degrees of social recovery are thereby accomplished. But too often the underlying and faulty instinctual organization of the psyche is left untouched and remains, at the least, as a predisposition to further trouble.

The successful application of the psychoanalytic method is sharply limited by various factors. A degree of intelligence above the average is desirable. The patient must be youthful in years, or at least in mind; the rigid mental makeup so often present in a person neurotic or otherwise in the second half of life, is not easily modified. There must also be a degree of fundamental vigor of personality and capacity for self-help, which not all the mentally maladjusted possess. In addition the circumstances of external life must not too completely limit the possibility for achievement of normal human satisfactions. Finally the time and in private work the amount of money involved restrict the availability of psychoanalysis, and at present compel it to take a place among the luxuries in therapy beyond the reach of the majority of people.

The foregoing remarks apply to the procedure of systematic Freudian psychoanalysis,—a painstaking, intensive and time-consuming task requiring months and sometimes years. The psychoanalytic method, however, in its connection with therapy, is not an all or none affair, and it has important contributions to offer to psychotherapy in general of far more extensive application.

Influence of Psychoanalysis on Other Psychotherapy

(A) Transference Therapy

Among the contributions which psychoanalysis has made to the older methods of psychotherapy, there is one of outstanding importance which alone would be epoch-making. It has banished overnight much of the mystery surrounding hypnosis, suggestion, and other obscure therapeutic relationships. It has thus made possible a shift of scientific interest from the surface and descriptive features of these procedures to the underlying and dynamic ones. In so doing, psychotherapy of all kinds is now able to free itself from a certain taint of mysticism and superstition which has brought a degree of ill-repute. Psychotherapy, formerly looked upon suspiciously by medicine, as a possible bastard child, has been legitimized and become respectable.

This change in status has been brought about

by the concept of transference, that obscure relationship between patient and physician, without which no psychotherapeutic method is of much avail, and with which all methods are to some degree effective. When there is absence of a so-called positive transference relationship, the most profound and helpful truths fall upon deaf ears. When it is present, even the most simple platitudes or naïve medical placebos may have far-reaching constructive effect, while the more valuable and legitimate methods are correspondingly reinforced. What is called transference by psychoanalysis is more familiarly known in its positive aspects as rapport. Good rapport has been recognized as desirable in any transaction between people, from selling washing machines to psychotherapy. In medicine, however, it has been given a place in the background, something like pleasant weather for vacations; a desirable setting for more important business. In therapy, the reputable physician has been inclined to minimize the place of rapport and is on the defensive against charges that rapport rather than specific methods accounts for his success. The charge that a therapist depends upon "personality" rather than special method has usually been made and received as a derogatory accusation implying that he is playing dangerously close to chicanery and fraud. Psychoanalysis has changed all this. Rapport has been given a legitimate place, studied as an important phenomenon in itself and its unconscious significance made plain. The term transference includes the extended meaning of rapport as worked out by psychoanalysis. It proves to be a force which can to a considerable degree be understood and controlled. In therapy, it is a curative agent, so far as possible, to be measured, standardized, and utilized like any other.

The need for transference, that is, to establish emotional bonds of dependence upon other people, is universal in human beings. It is at its greatest during the relative helplessness of childhood. In the normal adult there is substituted a considerable degree of self-sufficiency, a dependence upon the self rather than upon others. The neurotic is in many ways the child rather than the adult in this respect. The exigencies of the external world have forced upon him an appearance of self-reliance which may deceive both himself and others. The maturity of his physique and of his intellect aid in this deception, but underneath the surface there remains much of the emotional helplessness of the little child. He is at the mercy of his undeveloped strivings and antipathies which bring him continually into conflict both within himself and with the external world. When the social veneer presented toward the world can be set aside, as in the relationship with a physician, these underlying and for the most part unconscious needs and strivings, rush to the front with renewed intensity. No other relationship, with the single exception of those of a religious nature, make possible such a let-down of the official personality as does that of the medical. The setting aside of the surface adjustments forms the basis of the transference situation between physician and patient. The childish part of the neurotic personality reaches out to the physician, and a relationship is set up akin to that between bewildered, helpless child and strong, resourceful parent.

This, then, is the condition of rapport or transference. It sounds so simple. Previously shrouded in mystery and now revealed, it seems on first acquaintance so banal and unimportant. The mountain gone into labor has delivered only a mouse. But it is well to go cautiously. Important truths are often simple ones and it should not be too difficult to show that the seeming simplicity in this explanation of transference is not the mark of triviality. Before psychoanalysis, only the positive side of the child-parent relationship was made use of in therapy. The underlying emotional helplessness of the neurotic patient, the childish needs for guidance and authority, were utilized intuitively by the physician and he was thus given an almost magical power to relieve distress and to smooth out difficulties. The opposite of all this, the childish resentment and protest against authority, are equally active in the neurotic. Formerly they were so far as possible avoided as obstacles to therapy and often looked upon as stubbornness or ingratitude on the part of the patient. If these hostile attitudes, the so-called negative transference, took the foreground, the therapeutic relationship came to an abrupt end and treatment was a failure. The patient either gave up in discouragement, or sought other physicians till one was found with whom the positive transference could be successfully established. With the new knowledge gained through psychoanalysis, both positive and negative transference, as they appear, can be understood in their full significance and utilized for constructive purposes.

Hypnotism offers the best illustration of the transference situation, but is only the most dramatic manifestation of what is present in other methods. To produce hypnosis, the patient is encouraged to be completely passive mentally and physically, to give up all activity and self-assertion. The physician then assumes the rôle of stern authority (father), or persuasive tenderness (mother), and completes the transference relationship. The patient, attaining a kind of complete psychic surrender, gives up all self-direction, and goes into a hypnotic sleep. The situation is then akin to that of the little child

who gives himself over completely to the love of the strong, protective person.*

The question whether the normal individual can be hypnotized, or establish any of these relationships, need not too much concern us. The difference between the normal and the neurotic is only one of degree. The normal need for transference often enough comes to the front, particularly in time of trouble. These same needs are manifested in the universal religious strivings of mankind. Even the rough and fearless soldier can be as a little child in his surrender to a divine being.

So once again let the point be made that it is the belittled and often despised transference relation itself which gives the power for healing, sometimes with the aid of the special method glorified by the physician and sometimes in spite of it. It is for these reasons, that is, the power of transference and the disparagement of it as a curative agency by science, that quackery has always been so formidable a rival to legitimate medicine in psychotherapy. The aim of the therapy of the future must be to recognize and accept transference at its full value, and to utilize its force in combination with whatever special methodology is suited to the circumstances of the situation and warranted by the tastes and training of the physician.

(B) The Use of Passivity

Another Freudian concept, which is not confined in its application to technical psychoanalysis, is the emphasis on the passive rôle of the physician as a therapeutic dynamic. Passivity has received comment already in this paper, but the topic warrants further elucidation. It is a matter of general knowledge in non-medical affairs, that a person in trouble can often clarify his own thought and feelings and find new strength by confiding his difficulties to a sympathetic and interested friend. Often enough the confidant can think of little to say in reply, and feels woefully inadequate to advise or to guide. He is therefore agreeably surprised when told that his services have been helpful. Apparently something important happens in this kind of interview. The presence of an interested, non-critical listener makes possible a verbalization and clarification of mental content which could not be otherwise achieved. It appears that the person seeking help, objectifies in words his hitherto diffuse and confused ideas and emotional states, and then takes them back into himself with more insight and order than before.

In the past, attempts to deal with the neuroses by methods analogous to these talks with a silent friend have appeared too banal for serious consideration by medicine. The physician is primarily a man of action. He has the urge to therapy in a positive sense, and wishes to do something. To let a patient use him as a kind of foil while he empties and rearranges his own mind seems something of an affront to the dignity of the doctor. He may be quite willing to act solely as a friend, but if he is going to play his part as physician, he prefers to tell the patient what is the matter with him and what he should do. His tendency is to react to the passive rôle somewhat as he might if the patient took the scalpel from his hands to perform upon himself a minor surgical operation. The new understanding of the passive rôle of the physician in the therapeutic interview should make it as compatible with his self-respect as is the case after the injection of a serum, when he waits passively for it to do its work.

An early patient of Breuer and Freud, whose study marked the first step in the development of the psychoanalytic method, referred good-naturedly to her treatment as the "talking cure". By the same token, from the standpoint of the therapist, this could be designated the "listening cure"; and the listening method, sometimes called the interview method, can now be added to the list of special psychotherapies. This should not be looked upon as too easy a procedure for the physician. Skillful listening in psychotherapy means something more than the loan of an attentive ear. The patient will need help in his unburdening and self-revelations. Without some aid he may not talk at all, or else go around in a circle of fruitless superficialities, like the rocking-chair lady at the summer hotel who talks of her operations.

The material to be brought out in the technical listening interview may be grouped under three heads: First, what the patient wishes to say and has clearly in mind; secondly, mental states which trouble him and that he desires to talk about, but is unable to put into words; thirdly, important mental content, whether or not it is articulate, which the individual consciously or unconsciously does not wish to face squarely and tries to evade. Here some knowledge of analytic psychology is essential, but it does not have to be profound. No deep excursions into the unconscious mind need be made by this method. It is only that part of thought and emotion which lies just outside the patient's conscious grasp which needs revelation. This region is what psychoanalysis calls the *preconscious,* and is concerned more with the actual conflicts of the present than with the infantile substrata which are more deeply repressed. It is the extension of the patient's grasp to this preconscious realm under the influence of the

*For further discussion of transference factors in hypnotism, see:

(1) Freud; Group Psychology and Analysis of the Ego; International Psychoanalytic Press; 1922.
(2) Ferenczi; Contributions to Psychoanalysis, Chap. 2; Authorized Translation by Ernest Jones; Gorham Press, Boston.
(3) Schilder; Hypnosis, Chapter 6; Monograph Series No. 46, Nervous and Mental Disease Publishing Company.

transference which brings about the benefit in the interview listening method. He becomes better acquainted with his own half-concealed thoughts and emotions, while sensitive topics which it would be difficult to bring out of hiding in any other way, come to the front and are thereby relieved of that morbid strength which was a product of their isolation. Thus is accomplished a replacement of false and immature values by those of that adult reality which is represented by the rationale of consciousness.

The passive listening rôle has an advantage for the physician in that it makes it unnecessary for him to try and formulate in clear intellectual terms all that is going on, either to himself or to the patient. Again as in many examples of physical medicine, the proceeding is justified by the results, and many of the intervening steps can be left in obscurity. If medicine is going to take the lead in psychotherapy it behooves the profession to give earnest attention to modern viewpoints and special technique. Various non-medical agencies are treading on its heels. Already the interview method for dealing with human problems allied to neuroses has been worked out to a considerable extent in social service and in the personnel departments of industry. There is nothing to cause dissatisfaction in this fact, but certainly general medicine should not by indifference eliminate itself from fields which must always lie close to its special province.

To keep under way a one-sided conversation in the listening cure requires skill and adroitness on the part of the physician. The patient will often exercise great ingenuity to draw him into discussion, and thereby put the burden of the interview upon him. Again, the patient may seem unable to initiate anything when left alone, and will talk hardly at all except in the give and take of discussion. It is sometimes amusing or aggravating, as the case may be, when a person who is dumb or hesitant if given an opportunity to talk by himself, suddenly becomes eloquent when the physician starts to speak and interrupts so persistently as to make it difficult for the latter to advance any connected point of view. This always means resistance and an attempt to hold the interview on superficial levels. Talking to a listening physician, in contrast to an ordinary conversation with him, tends toward a kind of free-association, which leads to the revelation of deeper and more important mental material against which the patient automatically defends himself.

To sum up the matter of passivity, it is a psychoanalytic concept which requires renunciation by the physician of that kind of parental rôle which is characterized by the exercise of either indulgence or deprivation. In place of this authoritative relationship, it includes a listening attitude plus an attempted identification with the patient. This passivity acts as a special therapeutic force and a simple and practical application of it can be made in the interview method. So used, it operates toward bringing to the surface the material of the conflicts which are the source of difficulty, and works toward a reorganization at more adaptive levels. It applies most successfully to treatment of those problems which the patient himself senses, even if blindly, and when there is present a strong urge to work them out. Incidentally, the use of passivity shifts some of the more onerous burden of psychotherapy from physician to patient. As long as this is more fruitful for real aid, it is fair for him to rejoice at such emancipation. Often the physician of the past approached the neurotic patient as though going into battle and marshalled all his resources for the struggle. By explanation and inspiration, by exhortation and sympathy, by scolding and cajolery, he endeavored to lift him to a better plane of function. Today in many cases he can stand to one side and help the individual do these things for himself with far more constructive results. In other words, the physician no longer carries the sufferer on his back, but walks by his side along the road toward insight and recovery.

(C) Combined Methods

There are further aids that psychoanalysis can contribute to general psychotherapy in addition to the new and revised uses of transference and passivity as therapeutic agents. In certain practical ways, eclectic psychotherapy can enrich itself by borrowing from actual psychoanalytic technique. Various useful combinations of psychoanalysis and the older methods can be employed to meet particular needs. It is my purpose to outline one special combination which has been used successfully. This is given only as a specific example among others no doubt equally good. In this method the patient is allotted one half-hour a week which, if possible, begins and ends promptly on time. A proper financial compensation for this amount of time is not impractical for a patient of quite moderate means. Neither is such an arrangement too time-consuming for some of the work in a well-staffed neuropsychiatric or general clinic. At the least those interested in psychotherapy in such clinics can take a few patients under this plan. For either private work or clinic, the semi-analytic program proceeds as follows: The patient lies on a couch and the physician sits in a chair behind him and out of sight. The object of this arrangement, as in formal analysis, is to throw the patient more on his own resources. A very brief explanation at the first meeting will banish any strangeness or sense of alarm

at this unusual procedure. The half-hour is divided into two parts, roughly half and half, but modified as desired. The first period belongs to the patient. He does the talking and the physician says nothing beyond putting the other at his ease and drawing him out by brief comment. There is no coercion or obligation. If dealing with what seem to be important topics, the patient is left to himself, but when he comes to the end of special topics, he is led to free-association and asked to bring up whatever comes to mind on any subject whatsoever. If, on the other hand, he can say nothing, he is not reproved or made to feel at fault. It is understood that the first part of the half-hour is turned over to him, and he can use it as he chooses. If he is inclined to be wholly quiet, and wishes to rest or even sleep, that is all right. He need not be uncomfortable, and the physician can rest assured that this silence will not last for many interviews. All that is recommended to the patient is that whatever comes to his mind about anything at all he will put into words so far as possible.

Sooner or later in suitable cases for this method, the analytic situation develops. That is, the patient tends to let down the social barriers of ordinary conversation, establish friendly or hostile transference, and bring up into words mental material more closely connected with his underlying conflict and difficulties. However, it will not do to let this analytic situation persist as in actual formal analysis. If nothing is done to prevent, the patient will be left too much in midair and too defenceless to continue by himself for the interval of a week. Emotional forces may easily be released which will not be simple for him to manage. Therefore, during the second fifteen minute period, the situation is reversed, and the patient is required to be silent while the physician talks. If there has been free association in the first period, during which time the physician listens passively, some hints and leads for talking points have come up of which he can make use. He can give such superficial interpretations as he sees fit, and continue with suggestion, encouragement, or whatever he thinks is indicated. The patient has given the physician and himself a glimpse into the unconscious. This insight is clarified and used profitably so far as possible in a general way. In addition, the aid of other types of psychotherapy is brought to bear to supplement the analytic work and the patient is sent out for the week ahead with renewed strength and support. The analytical part of the hour, so to speak, leaves him somewhat naked to the world while the supportive part reclothes him for the struggle of daily life. In this combined method, the repressions which were let down in the first period are put up again in the second, but in the interim, there is an opportunity for useful modification of the repressed material which has been ventilated in free discussion. Usually at the beginning the patient comes to the time of dismissal full of desire to talk on his own part concerning matters brought up by the physician. He soon learns that he has had his turn, and is satisfied to wait until the next week for what he wishes to say. By that time unimportant and repetitive matters which simply encumber the interview are likely to have disappeared and only the more important issues will be brought up.

At the risk of undue repetition, further warning should be given at this point concerning dangers connected with these combined methods of therapy. In making use of them it is far safer to attend strictly to current conflicts and difficulties and avoid any attempt to deal with problems of the deep unconscious. These current conflicts are concerned mainly with the more superficial significance of the presenting neurotic symptoms and with the disturbed relationships which always exist with people of the immediate milieu. In particular, caution needs to be observed by physicians without technical training in psychoanalysis. Repressed unconscious material which is powerful enough to cause a long-continued neurosis has dynamite in it. If set off systematically and by degrees in a formal analysis, that is one thing; to explode it all at once by overenthusiastic or careless handling is another, and one which may bring about intensification of symptoms and general emotional turmoil. These undesirable and sometimes alarming reactions may result from either of two errors in technique. First, they may follow too frank and hasty interpretations of underlying psychic mechanisms which the physician can see clearly, but which the patient is quite unable to assimilate without long preliminaries. Often the nearer correct such interpretations happen to be the more undesirable are the effects. The second and still more dangerous error is to allow the transference situation to get out of control. So long as the physician maintains the authoritative or kind father rôle, as is the case in the older psychotherapies, there is not likely to be trouble. In such situations the neurotic patient reacts in the transference much as in his relationships to people in everyday life, with his underlying infantile attitudes so sifted through layers of repression that they can be acceptable to his conscious mind. As already explained, when the physician takes the passive analytic rôle there is a tendency for repressions to be set aside while there come to the front the unconscious needs and stirrings which are accompanied by fear as well as desire.

In the combined method under discussion this must only be permitted a little at a time and the dosage can be governed rather automatically by the procedure, already described, of shifting from the analytic situation to that of ordinary psychotherapy in the latter part of

the treatment hour or at other times as indicated. This shift of situation is accomplished when the physician drops his passive, detached and listening position, becomes active and authoritative, and does the talking himself. By this change, the transference situation is held within bounds, whether in the new rôle the therapist chooses to reassure, give suggestions, advise in a practical way, or lay down the law.

At another time it is hoped to describe more fully and with illustrative clinical material this combined utilization of analytic and preanalytic methods. Incidentally, in the hands of a trained analyst, the same plan has been found of diagnostic value where the advisability of a systematic analysis is under question. If carried over a period of a few months, this program, whatever other profit may result, will show convincingly whether or not a more complete analysis should be advised.

Summary

In final summary, the attempt has been made in this paper to bring psychoanalysis from its isolated position as a highly technical specialty into more close connection with that everyday psychotherapy which for the majority of neurotic problems must continue to be the main resource in medicine. It is hoped that this discussion will encourage some of those who wish to use psychotherapy, to develop their own methods with additional understanding and fresh interest, and that they will look upon the obscure forces which they are manipulating as worthy of the same scientific consideration as other therapeutic agencies.

It is also desirable that the conscientious physician outside the specialty of psychiatry should not feel that because he is untrained in mental major surgery he should leave the whole field of psychotherapy to other hands. In this department of medicine, there is need for minor surgery as well as major, and the former can be competently done by all physicians general or special, who, in an earnest spirit, are willing to undertake it.

A REPORT OF AN INVESTIGATION RELATING TO LIMITING THE SIZE OF FAMILIES

Efforts of couples to limit the size of their families by ordinary preventive methods, without special medical instructions in their use, are about 75 per cent effective during the time these methods are used, according to the report of an investigation by Regine K. Stix, M.D., and Frank W. Notestein, of the Milbank Memorial Fund, in the current issue of the foundation's Quarterly.

An important finding of the investigation was that the preventive methods, various in kind, did not in any way lower the capacity for motherhood when this was desired. The number of births averaged 2.26 for an average of less than ten years of married life.

The records for this study were obtained from 714 women living in the Borough of the Bronx, New York, selected because they had come to a birth control clinic for advice. Each woman was interviewed by Dr. Stix on her experience with "untutored efforts" at family limitation before her first contact with the clinic. The analysis covers only the preclinical period in each case, which ended in 1931. Careful statistical allowances were made for all factors of time and marital life, and the results indicated an effectiveness of 75 per cent of control for the time when tried.

About 97 per cent of these women had made some effort to limit their families before attending the clinic. Of these, more than half did not try to limit their families until after they had had at least one child.

The families studied had a median income of $2,300 in 1929 and of $1,200 in 1932. About one-fifth of the families were destitute or supported by organized relief in 1932.

This investigation sponsored by the Milbank Memorial Fund is one of a series of studies on population problems, which have for their purpose the assembling of scientific knowledge regarding the effect on the birth rate of such factors as race-stock, education, income, and the spacing of children. Among these studies is one directed by Dr. Raymond Pearl, of the Johns Hopkins University, on the prevalence and effectiveness of preventive methods in family limitation. Dr. Pearl obtained his data in coöperation with physicians in 131 hospitals located east of the Mississippi River.

A BEQUEST TO THE CHILDREN'S HOSPITAL IN BOSTON

The will of Irving Richardson of Brookline contains a grant of ten thousand dollars to the Children's Hospital. Such evidence of appreciation of hospitals is gratifying to such institutions and the medical profession. This particular recognition of the Children's Hospital will enhance the important work carried on in this very useful institution.

A STUDY OF ENCEPHALITIS

Senior Surgeon J. P. Leake has been directed by the United States Public Health Service to visit New York, Boston, Mass., Springfield, Mass., Philadelphia, Pa., and other places in these states as may be indicated for the study of encephalitis.

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 20041

PRESENTATION OF CASE

First admission. A sixty-six year old American expressman entered three years before his final admission with the complaint of epigastric discomfort and dizziness of three months' duration.

For the past year and a half he had been troubled with headaches. Six months before entry these became more frequent and for the past three months had increased in severity. They were suboccipital and radiated to the frontal region a short time after the onset. They were not brought on by exertion and bore no relation to any other factors. They were described as severe, with continual throbbing in the back of his head and ears. For the past six months he had been emotionally unstable and very often had had fits of crying. Three months before admission, at the same time that his headaches increased in severity, he began to experience fairly continuous dull aches in his epigastrium and along the left costal margin. These attacks had been present for the past three months and were worse immediately after eating. They were relieved by pressure, not by soda. The pain radiated into his chest beneath the sternum and at times was accompanied by a feeling of bloating and distention. He had however no belching and no sour eructations. There was no dyspnea on exertion and no edema. He had had blurring of vision frequently during the past three months and on two occasions completely lost the sight of his right eye for about one minute at a time. He stayed five weeks at a sanatorium but received no drug therapy there.

Family history. His father died suddenly in bed at the age of sixty-one. His mother dropped dead at the age of sixty. One sister was living and well at seventy-five. One brother died at the age of eighty, having had two shocks previously. One brother died at thirty-five of Bright's disease.

Examination showed a well developed and well nourished man in no distress. The sclerae were injected and questionably icteric. The lungs were clear. The heart was slightly enlarged. The left border of dullness was 10.5 centimeters from the midclavicular line. There was a rough systolic murmur heard loudest at the apex and the aortic area. There was also an aortic diastolic murmur. The blood pressure was 230/110. At the apex the first sound was obscure, the second sound increased. The peripheral vessels were hard and beaded. There was no capillary pulse. Examination of the abdomen was negative except for bilateral inguinal herniae.

Examination of the urine showed a specific gravity of 1.018 to 1.030. There was a slight trace of albumin on two of four examinations. There were about forty white blood cells and numerous hyalin and granular casts on two examinations. The examination of the blood showed a red cell count of 5,400,000, hemoglobin 85 per cent, and a white cell count of 9,000, 63 per cent polymorphonuclears. The Hinton test was negative. The non-protein nitrogen was 36 milligrams. The phenolsulphonephthalein test showed 35 per cent excretion in thirty minutes.

An electrocardiogram showed normal rhythm, rate 80, QRS complexes slurred and widened. There was diphasic T_1 and T_2.

X-ray examination of the heart showed it to be considerably enlarged. The total transverse diameter measured 16.5 centimeters, the chest diameter 28.5 centimeters. There was no increase in the supracardiac shadow.

One examiner believed that he felt a plateau type of pulse. He felt no thrill but heard a loud blowing high pitched systolic murmur at the base which was transmitted to the neck on both sides. The patient was discharged improved on the nineteenth day.

History of interval. After his discharge he always felt tired, especially in the morning upon awakening. He was also very much upset because he was losing his sexual power, especially during the two years just preceding his reëntry. Five months before admission he lost his memory for a few days. He believed this was due to the digitalis which he was taking and consequently discontinued it. Three months before admission he began to have dyspnea, which gradually increased in severity, making him almost breathless on the slightest exertion. For three weeks before reëntry he had a constant and severe headache. One week before admission he became emotionally upset, began to cry, and feared that he was going to die. He had no edema and no orthopnea.

Second admission, three years after the first. Physical examination showed a fairly well developed and poorly nourished elderly man in great mental and respiratory distress. There was marked pallor and cyanosis. His breath was uremic. He was sweating profusely and his skin was cold and clammy. He was completely edentulous. The retinal vessels showed marked sclerosis. There was dullness with diminished breath sounds at the right base, with fine moist râles. The expansion of the chest was poor. The heart was enlarged. The sounds were of poor quality, absolutely irregular and feeble. There was an apical gallop rhythm.

There were systolic murmurs at both apex and base. The aortic second sound was equal to the pulmonic second. The blood pressure was not obtainable. The liver edge was not felt. The dullness was down one fingerbreadth.

The urine showed a specific gravity of 1.020 with a very slight trace of albumin. There were two to four white blood cells per high power field and large numbers of hyalin and a few granular casts. Examination of the blood showed a red cell count of 5,300,000, a hemoglobin of 55 per cent (*sic*). The white cell count was 16,600, with 70 per cent polymorphonuclears. The stools were negative. The nonprotein nitrogen was 115 milligrams. The Hinton test was negative.

The patient failed rapidly and died one week after admission.

DR. GEORGE W. HOLMES: The film which we have was taken at the time of his first admission and shows considerable enlargement of the heart, particularly towards the left in the region of the ventricle, also a moderate degree of tortuosity of the aorta without evidence of dilatation.

There is nothing unusual in the lungs and no change in the outline or position of the diaphragm.

DIFFERENTIAL DIAGNOSIS

DR. HOWARD B. SPRAGUE: There are a few differences between the story that has been given here and the summary that I had. I will try to see if there is not some consistency to the story however.

A man of sixty-six comes in complaining of definite evidence of cerebral arteriosclerosis evidenced by his headache, by his fits of crying, his depression and his emotional instability. In addition, he has epigastric discomfort which Dr. Chapman says was relieved by food but which my summary says was worse immediately after eating. I think we shall have to say that this fits in with the so-called gastric masquerades of coronary disease.

The story does not seem consistent enough to make one think of malignancy or ulcer or gall bladder disease. He at that time had no dyspnea on exertion, and the story then was of an anginal character and one suggesting cerebral arteriosclerosis.

There is a striking vascular family history. The mother and father died suddenly at about the age that this patient had reached.

As far as the physical examination is concerned, especially the heart, we find cardiac enlargement, a blood pressure of 230/110 and an aortic systolic murmur. There is a note here that an aortic diastolic murmur was also heard. There is a suggestion that he may have had a plateau pulse. This evidence should be weighed, at least as far as its indicating valvular disease is concerned. At his age one thinks of sclerotic aortic stenosis. We have well marked hypertension. The systolic level is high, the diastolic moderately high. The aortic second sound is present and there is no thrill mentioned over the aortic area; I should think the evidence was in favor of this being an aortic systolic murmur due to dynamic aorta and hypertension and not to aortic stenosis.

There was no great evidence at first of trouble with the renal picture.

He had an electrocardiogram which would be characteristic of arteriosclerotic coronary disease but not of coronary occlusion at that time.

Three years later he comes in having had the same cerebral difficulties but with additional progress of cardiac failure. We can say that the cerebral symptoms before were not due to congestive failure, so he must have had a bad condition of the cerebral arteries and not a functional disturbance, because we are only now getting congestive failure. We also have evidence of difficulty with the kidney function, with a non-protein nitrogen of 115.

The sounds in the heart at this time were feeble. Apparently auricular fibrillation was present, but there is a note here that he had gallop rhythm. Gallop rhythm with auricular fibrillation is not a common description, that is, gallop rhythm signifies a sound like the galloping of a horse. With auricular fibrillation and absolute arhythmia it is difficult to get that impression in your mind. It would be like a three-legged horse galloping.

He has had some sort of attack recently, with marked weakness and a sense of impending death. The blood pressure is said to be unobtainable. One wonders if this could have been a relatively silent coronary occlusion.

I should say then that the diagnosis was general arteriosclerosis, cerebral, cardiac and renal, with hypertension and with angina followed by congestive failure, uremia, possibly terminal bronchopneumonia, with a question as to whether there may have been some actual cardiac infarct.

DR. RICHARD C. CABOT: I am interested in the words dynamic aorta. I have always heard that used as an aorta that jumps, bounds and expands extraordinarily in the epigastrium. Dr. Sprague is evidently using it in another sense. I should like to know what it is.

DR. SPRAGUE: I mean in hypertension we get during systole dilatation of the aorta that allows a relative expansion far out of proportion to the size of the aortic ring, resulting in a systolic murmur not signifying valvular disease.

DR. TRACY B. MALLORY: Have you anything to add, Dr. Palmer?

DR. ROBERT S. PALMER: I followed this patient in the Outpatient Department after his first admission to the wards. I thought at that time it was perfectly obvious that he was suffering from the late effects of long standing hypertension. During that time he appeared to be dying at the top, as it were, with episodes of disorientation, loss of memory and confu-

sion. I felt that the differential diagnosis was between the so-called hypertensive crises and minute thrombi with small areas of softening.

I think he was especially extraordinary in the amount of obvious peripheral sclerosis which he had, both in the eyegrounds and the other peripheral vessels, so that in the Outpatient Department in the last year it was very hard to obtain the blood pressure by auscultation and hard to palpate his pulse. However, the blood pressure could be estimated by the oscillations of the mercury column and the blood pressure remained up.

From the physical examination I think he probably shows sclerosis of the aortic or very possibly of the mitral leaflets at autopsy. Depending on what your definition is, you could call it aortic stenosis or not.

I did not see him at the end and I wondered whether he had enough sclerosis in the kidneys to give actual kidney failure or whether the renal failure was due to general passive congestion.

I shall be especially interested if the head was examined to know if he had multiple areas of softening.

Clinical Diagnoses

Generalized and cerebral arteriosclerosis.
Arteriosclerotic and hypertensive heart disease.
Congestive failure.
Auricular fibrillation.
Secondary anemia.
Aortic stenosis?
Bilateral inguinal hernia.

Anatomic Diagnoses

Coronary thrombosis.
Cardiac infarction.
Mural thrombi, both ventricles and right auricle.
Pulmonary embolism with infarct, left lower lobe.
Cardiac hypertrophy, hypertensive type.
Aortic stenosis, calcareous.
Arteriosclerosis with calcification, marked coronary and aortic.
Cholelithiasis.
Hydrothorax, bilateral.

Pathologic Discussion

Dr. Mallory: Again, unfortunately, we did not have permission to examine the head.

The main findings were a greatly enlarged heart with infarction, which was situated at the apex of the left ventricle, involving the lower portion of the interventricular septum and also the apex of the right ventricle.

A quite unusual finding, although probably not of great significance in the symptomatology of the case, was another entirely separate infarct in the right auricular appendage with a small thrombus overlying it.

The occlusion of his coronary was in this case fairly typical. It was in the descending branch of the left coronary, though nearly 5 centimeters from the origin of the vessel rather than close to the point of bifurcation where we usually find it. In this case there was a frank thrombosis.

The aortic valve showed a quite definite degree of calcification on the surface of the valve cusps towards the sinus of Valsalva, the usual spot in which atheromatous deposits occur. This resulted in a pyramidal wedge-shaped mass of calcium sticking up from the base of each aortic cusp and making I think a significant though not great degree of aortic stenosis of the typical Mönckeberg's type that seems to be very definitely due to arteriosclerosis, not to a previous infectious process.

I think the renal picture is of some interest in this case. Three years before his death he had a normal kidney so far as functional tests were concerned, and yet he died in the hospital in uremia with a secondary anemia, peculiar in character, a hemoglobin of 55 per cent and a normal red cell count. It suggests to me a rather rapidly progressing renal lesion. Some people, Aschoff in particular, have talked of what was called a compensated and a decompensated stage of renal arteriosclerosis, pointing out that cases may run along with a slowly progressive lesion for a long period of time and then suddenly the process appears to flare up and the progress becomes very rapid. The clinical and histologic findings in this case would fit very well with such an idea. I think if the X-ray Department had been asked to look particularly for aortic stenosis in this case they undoubtedly would have found it. There was extensive calcification, which should have been readily visible, and I rather doubt that there is any other way in which we can pick these cases up. Would you agree with that, Dr. White?

Dr. Paul D. White: Yes; the mildest, slightest degrees cannot be diagnosed clinically. A moderate degree might have been suspected, as Dr. Sprague suggested, and the x-ray evidence if it could be obtained would be very important.

Dr. Greene Fitzhugh: Did he not have too wide a pulse pressure to have had a plateau type of pulse? The blood pressure was 230/110.

Dr. Sprague: Yes; I think he did. The description of plateau pulse is pretty subjective. If a person believes aortic stenosis is present he is apt to describe a plateau pulse in order to complete the picture.

Dr. White: It is also important to know that we can have aortic stenosis with a very full pulse. The other day we examined a young man with aortic regurgitation, a marked aortic systolic thrill and a murmur that could be heard off the chest, and the pulse pressure was over one hundred.

CASE 20042

Presentation of Case

A forty-six year old Maine housewife entered with the complaint of abdominal distention of a month's duration.

One month before admission about two hours after her evening meal the patient noticed that her abdomen was slightly distended. The distention increased during the evening and was associated with severe pain, chiefly in her flanks but spreading upward to the interscapular region. The pain was worse at the end of expiration, making it difficult for her to breathe. She had no nausea or vomiting. She had no bowel movement that day and was unable to pass any gas. After about an hour the pain gradually decreased in severity, although the distention persisted. She awoke the next morning feeling well except for general abdominal tenderness and slight distention. During the next week she had two similar attacks. Her abdomen remained definitely distended between these attacks. Ten days before admission after an attack she was seen by a physician who gave her a laxative. X-ray films were taken after a barium meal. One week before admission her appetite became poor and she took a shredded wheat biscuit for supper. Half an hour later she became nauseated and vomited. Since that time she had had a steady feeling of something tugging downward in her abdominal organs. Two days before admission she suddenly felt nauseated and began to vomit. The vomiting continued all night and also the following day and night. The distention was more marked. At the same time she developed a sharp substernal burning sensation which remained until the morning of admission. The vomitus did not contain any blood. During the past two weeks she had eaten very little and her bowels had moved every day with their usual regularity. There was always a little bright red blood in the stools, but she said that she had had this for at least three years and that it had not increased in amount. There were no tarry or clay colored stools. During the past ten days her stools had become definitely decreased in diameter.

Family history. Her mother was living and well. Her father died at the age of sixty-one of apoplexy. One sister was living and well.

Marital history. The patient had been married twice. She was divorced from her first husband after fifteen years. She had two children by her first marriage. Both these children were living and well. There had been two miscarriages. She was married a second time five years before admission. Her husband was gradually becoming blind.

Past history irrelevant.

Physical examination showed a poorly developed and nourished woman in no apparent distress. There was evidence of a considerable loss in weight. The skin and mucous membranes were pale. The abdomen was moderately distended. There was a slightly tender hard mass approximately 4 by 7 centimeters in the midline just below the umbilicus. The mass was not freely movable. The uterus was retroverted. There was a small fibroid on the posterior aspect. The heart and lungs were negative. The blood pressure was 132/88.

The temperature was 99°, the pulse 88. The respirations were 20.

Examination of the urine showed a specific gravity of 1.026 and a slight trace of albumin. Examination of the blood showed a red cell count of 5,200,000 with a hemoglobin of 80 per cent. The white cell count was 11,000, 69 per cent polymorphonuclears. The stools were normal. A gastric analysis showed 750 cubic centimeters of fasting contents. Guaiac was negative. There was 12 cubic centimeters of free hydrochloric acid, after histamin free acid 44 cubic centimeters. The non-protein nitrogen was 42 milligrams.

X-ray films taken at an outside hospital showed a constant defect on the greater curvature side in the prepyloric area.

On the sixth day an exploratory laparotomy was performed.

Differential Diagnosis

Dr. Beth Vincent: I must confess that the history, which I had the privilege of reading before you heard it, while it suggests of course an abdominal condition does not make clear to my mind the type of abdominal disease with which we are dealing. Here is a woman forty-six years old who for a month is troubled mostly by distention and pain and at times in these attacks by a good deal of nausea and vomiting. Whether the distention and the symptoms are due to an inflammatory lesion in the abdomen or whether they are to be accounted for by subacute obstruction I think we cannot tell from that history alone. Moreover, the history does not seem to me to place the site of the lesion with any definiteness. I do not know whether I should expect to find an upper or a lower abdominal lesion.

When we come to the physical examination we at once get a very definite lead. This patient was a thin woman, I take it, with a rather prominent abdomen, and in spite of that they could feel a tumor in the midline just above the umbilicus that in one dimension was about as long as my finger and in the other dimension about half as long. The abdomen was prominent. That was due to distention, so I suppose we can assume that there was no very great amount of free fluid in the abdomen.

When the surgeon feels a mass like that I think he first tries to make up his mind whether he is dealing with an inflammatory lesion or some form of tumor. From the point of view of its being possibly an inflammatory lesion we look back to the history, and while we have no record of a temperature during these attacks,

when she was in the hospital I think she had a temperature of 99° and a leukocytosis of 11,000. If it is inflammatory it is not in a very acute stage. If it is inflammatory I will say also from the surgical point of view that the location of the tumor is rather unusual. In a woman of that age if you felt that same mass in the right upper quadrant you would think of gall bladder, if in the right lower quadrant you would say in all probability that you were dealing with subsiding appendicitis.

If it is inflammatory, what can it be? She could have tuberculosis and this might be a manifestation of this disease localized in the glands of the mesentery or in the great omentum. It is just in the region of the transverse colon, and a woman of that age might be suffering from diverticulitis with a secondary abscess. In my experience however diverticulitis occurs more often in the left lower quadrant and is associated with the sigmoid flexure. If the sigmoid flexure is of a movable type the tumor may be over in the right quadrant and the sigmoid being coiled down there, the disease may simulate appendicitis. As far as that goes, and in the absence of a bismuth enema x-ray to help in showing diverticulosis, I think we have no clear evidence that this can be diverticulitis. Neither of these conditions is very common.

As to tumor—and by tumor of course I mean neoplasm or some cyst—this mass, as described, seemed slightly tender and hard and not freely movable. First we have to consider the structures situated in this region, and there are a good many just there that might be involved. We have spoken of the great omentum. Of course there may be a loop of small bowel here, but it is only fair to say that tumors that involve the loop of the small bowel are very rare and are apt to be more mobile than this is described as being, unless fixed to the anterior wall. The same might be said of tumor of the transverse colon, although I should not expect that to be so mobile as a tumor of the small bowel. It may also be fixed to the abdominal wall. In addition, before we go on to the other structures, a woman of forty-six might have a metastatic manifestation of ovarian tumor there. One would not go further before making a pelvic examination. In this case it showed a retroverted uterus with a small fibroid on the posterior wall, so I think it is fair to assume that there was no malignant pelvic disease that had spread to the upper abdomen. As to the other structures in that region, we have spoken of the transverse colon, and of course there is the stomach. It does not have to be a very low stomach to make a tumor palpable at this point. There is also the pancreas. If Dr. Mallory was unkind enough to lay a trap for us, we may have an aneurysm in the abdominal aorta.

The transverse colon, the stomach and the pancreas are most likely to be the seat of this lesion. If it is malignant disease of the transverse colon the patient could have had these symptoms. Perhaps the pain is not characteristic, but distention and subacute obtruction are consistent. At once we would go and get a story of her stools. We find a note that they were negative, although she said that she had passed fresh blood quite often for a good many years. In the absence of a proctoscopic examination showing that the blood came from high up we have to assume hemorrhoids. The stools were negative. With cancer of the colon, one of the common type, if we search long enough the stools do show some blood. We can have the scirrhous, constricting type of tumor with subacute obstructions with which bleeding may not be a prominent feature.

When we come to the stomach we immediately have something very definite, unless this is another trap laid for the surgeon, by the x-ray man in this case. He speaks of a defect in the greater curvature of the stomach in the prepyloric area. Of course that suggests a tumor, and we can think of cancer of the stomach in spite of the symptoms and at once we look further to see if there is anything else to support this diagnosis. She has a tumor and an x-ray picture that shows that the stomach is involved. She has vomited, but the vomitus has never shown blood. Her stomach contents were negative for blood and so far as I can see the chemistry of the stomach is within normal limits and not such as you would expect to find in cancer, the most common tumor of the stomach. All this evidence is against cancer. All the other tumors, the benign tumors, fibromas and papillomas, may not show blood, and they are so rare that a surgeon may not make a diagnosis even at operation. It is usually made on microscopic examination of the specimen. So far as it goes you have to lay considerable stress on the x-ray picture, because in my experience the radiologist is very accurate about duodenum and stomach examinations. When it comes to the transverse colon and the descending colon I think it is only fair to say that they do not pick up the lesions there with the same accuracy and regularity that they do in the stomach. This case does show a defect, but that may be due to pressure from without the stomach. Where can it come from? It can come from a very large tumor of the transverse colon, but in that case if we had a bismuth enema it would show by x-ray. There is another organ that may show a tumor that presses on the stomach and that is the pancreas. It is possible that all these attacks were due to a low grade pancreatitis. She may have ended with a cystic tumor of the pancreas that is palpable. This woman may have had pancreatitis all the time.

I am frank in saying, and you probably suspect it by this time, that I cannot make a definite diagnosis in this case. I would advise just what was advised in this instance, exploratory laparotomy. If I had been the surgeon I should have made an upper abdominal left paramedial incision. If I found a negative colon I should

be a little disappointed. Then I would examine the stomach and if that were normal I should have a pained look, and if the pancreas went back on me I must say I should feel very bad indeed, I should say then that it just was not my day, and be prepared to find an aneurysm of the aorta and perhaps impacted feces in the transverse colon.

DR. TRACY B. MALLORY: Dr. Leland, you operated on this patient and can tell us your findings.

DR. GEORGE A. LELAND: We went through the deliberations of a preliminary diagnosis very much as Dr. Vincent has outlined and because it is necessary to be positive, according to the American College of Surgeons, we made a diagnosis of cancer of the stomach, realizing the atypical character of a great many of the symptoms.

We made an upper abdominal incision, just as Dr. Vincent advised, and upon exploration we found the colon to be negative. We found the stomach to be negative. We could not be quite sure about the pancreas.

The positive findings: "Under avertin anesthesia the abdomen was opened through a median epigastric incision. When the abdomen was opened free clear straw-colored fluid was found and approximately one quart was removed by suction. Exploration showed a large retroperitoneal mass extending to the right of the mesentery and across the abdomen transversely, overlying the spinal column, at about the level of or just below the pancreas. There was also an additional mass running down an inch to the right lateral gutter. From this a biopsy specimen was removed. In the posterior culdesac of the pelvis there were several metastases. The fundus was retroflexed and represented the nodules felt by rectum. On the anterior aspect of the uterus was a small fibroid about two centimeters in diameter which probably had been mistaken for the fundus. The liver was enlarged and displaced downward. This low position seemed to be due to metastatic nodules about 4 centimeters in diameter in the middle of the right lobe. The gall bladder was distended and slightly tense. The stomach was large, flaccid, entirely free from any evidence of disease. In view of the extensive involvement in the abdominal cavity there appeared to be no indication for any operative procedure; accordingly the abdomen was closed."

We had operated on this patient with the hope that we should be able to relieve her of the apparent symptoms of high obstruction. With these findings we decided that her obstructive symptoms, vomiting, gastric stasis, were due to reflex rather than organic disease, so we closed the abdomen.

The preoperative diagnosis was carcinoma of the stomach. We were unable to determine from the operation where the cancer originated, so our postoperative diagnosis was carcinomatosis.

FURTHER HISTORY

The patient developed postoperative abdominal distention. A gastric lavage on the tenth day yielded eighteen ounces. At the same time there appeared a slight icteric tint in her sclerae. The icteric index taken that day was 35 milligrams, as compared with 5 milligrams five days previously. There was recurrent vomiting of bile stained material. The jaundice was greatly increased. She failed rapidly and died three weeks after admission.

CLINICAL DIAGNOSIS

Carcinoma of the stomach.

ANATOMIC DIAGNOSES

Scirrhous carcinoma of the cecum with metastases to the lungs, both adrenals, the liver and the retroperitoneal lymph nodes.
Pulmonary thrombosis (tumor thrombi).
Obstruction of the common bile duct due to external pressure.
Jaundice.
Chronic pancreatitis.
Ascites.
Hydrothorax, bilateral.
Fatty vacuolization of the liver.

PATHOLOGIC DISCUSSION

DR. MALLORY: The autopsy showed carcinomatosis and the question came up as to where the primary lesion was. At the time of autopsy we found cancer involving the cecum, the ascending colon and the transverse colon. The entire pancreas was very large, firm and hard, although on section the structure seemed fairly normal.

The mass which had been felt on the posterior surface of the uterus appeared to be really the fundus of the uterus, which was tipped over backward, and there was a metastatic nodule of cancer on the anterior surface just about the size and shape of a fibroid. That was not determined until the microscopic examination was made.

At the time of autopsy we thought that the cancer was primary in the pancreas. When the microscopic sections came through, however, we found a perfect shell of cancer around the pancreas but no tumor in the pancreas at all. The one lesion with the characteristics of primary tumor was the one in the transverse colon, though this was bound so firmly to the pancreas that the surgeon had no chance of recognizing it.

A PHYSICIAN: Do you think there was enough in the colon to show with the barium enema?

DR. MALLORY: I should expect at least some deformity would have been present. I hasten, however, to exonerate our X-ray Department. The x-ray examination in this case was done outside the hospital.

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MASSACHUSETTS, WHITHER GOEST THOU?

THE 1932 Report of the Massachusetts Board of Registration in Medicine* has been published recently and challenges comparison with the Report for 1931. The number of candidates examined rose from 383 to 433; the number registered after examination fell from 213 to 208; the percentage of failures on examination rose from 44 to 51. The number of diplomates of the National Board of Medical Examiners who were registered rose from 40 to 55. These figures do not tell the whole story and the report deserves closer analysis.

Leaving out of consideration the European schools, of which few graduates appeared in either year, and accepting the usual classification of schools employed outside of Massachusetts, one finds some interesting results of computations based on figures given in the report. In 1931, 211 graduates of approved schools were examined; 11 or five per cent failed, and 200 or 95 per cent passed. From the nonapproved schools, 125 graduates were examined, of whom 36 or 28 per cent passed, and 89 or 72 per cent failed.

When one turns to the corresponding figures for 1932, one finds there was a falling off of 41 in the number of graduates of approved schools who took the examination and an increase of 130 in the number of graduates of nonapproved schools. The loss in the former group is offset in part by an increase of 15 in the National Board diplomates, making a net loss of 26. No graduates of nonapproved schools are admitted to the National Board examinations. The percentage of failures for 1932 rose for the approved group from five to 13; and for the nonapproved group from 72 to 78.

Among the 55 candidates from the nonapproved group who were registered were 16 osteopaths, who might have been registered as such in some other states; but in Massachusetts the osteopath registered under present conditions, practices on the same basis, with the same freedom to select and administer any therapeutic procedure of major surgery, as does the holder of the degree of doctor of medicine. So it is clear that there were registered in Massachusetts in 1932, 39 physicians who would not be admitted to examination in any other state. That is to say, approximately 15 per cent of those who were admitted to practice in 1932 would not be even admitted to examination in any other state.

There is no warrant for drawing far-reaching conclusions from a comparison of two consecutive years, but the figures are suggestive of certain trends. In the first place, there is a steady increase in the number of National Board diplomates who enter practice in Massachusetts. It is to be hoped that in future reports the Massachusetts Board will list the schools from which these diplomates come. In the second place, there seems to be an increase in the difficulty of the examination since the percentage of failures has increased. Perhaps the examinations should be made still more searching as the statute prescribes that they shall be sufficiently thorough to test the fitness of the candidate to practice medicine. In the third place, there is a doubling in the number of applicants from the nonapproved schools and a falling off of graduates from the approved. But what stands out in most striking fashion is that, of the physicians actually licensed to practice, the percentage who came from nonapproved schools rose from 13 in 1931 to 21 in 1932. There was a corresponding falling off in the graduates of the approved schools. This is not brought out by the Board but is clear from the figures in the report. Is the Board giving the people of the Commonwealth the protection they should have?

*Public Document 56.

HEALTH, PAST AND PRESENT

DESPITE the continued economic distress, the year 1933 presented us with a deathrate which was either the lowest or very near to the lowest of all time, with progress in the control of the preventable diseases continuing unabated. Man is but mortal, however, and those who did not die in 1933 must die sometime; we cannot expect the deathrate to go steadily and continually lower.

Moreover, as the statistical bulletin of the Metropolitan Life Insurance Company points out, the beginning of a new year is more than an opportunity for gratification over past performances; it is also a good time to look forward to future responsibilities. As the economic depression slowly lifts, there is danger that we may enter into a period of health depression. Renewed industrial activity will mean an increase in the number of those exposed to occupational hazards. With increased employment will come decreased leisure and less out-of-door recreation. Human values may be overlooked with increased industrial occupation.

Most important of all, perhaps, are the curtailments which have been made in public health expenditures. Will we be content, as the *Bulletin* states it, to maintain our health machinery in its present restricted fashion, or will there be an expansion of necessary health services as our increased financial resources permit?

Knowledge is available to add to the length of life, if we would but use it. We can rid ourselves completely of typhoid fever, yet we have each year over 4,000 deaths from this cause, and ten times that number of cases. In 1933 there were 4,000 deaths from diphtheria—a preventable disease—and nearly 60,000 cases. Infantile diarrhea has taken a toll of 14,000 babies; most of these deaths could have been prevented, as could many of the fifty-odd thousand deaths from diseases of early infancy. The victims of tuberculosis numbered over 70,000, and the complications of pregnancy took the lives of more than 13,000 women. Over 85,000 fatalities were due to accidents. In all, these and other preventable causes account for the loss of nearly a quarter of a million lives.

The prevention of such deaths in 1934 will depend largely on the extent to which the public health and public safety programs of our country are enabled to carry on with sufficient funds and adequate personnel. Fairly adequate health service cannot be supplied at less than $1.00 per capita per annum, which was the approximate expenditure in 1930. The standard set by the American Public Health Association is $2.00. The present expenditure is close to seventy cents per annum. Let him who runs, read.

THE PERIODIC HEALTH EXAMINATION

IN 1922, some fifty years after it was first suggested, the American Medical Association endorsed and recommended the practice of periodic health examinations. In spite of further endorsements and large amounts of propaganda, its practice is still far from universal. Although it numbers many conscientious physicians among its proponents, it has not as yet been standardized. There has been a paucity of real scientific contribution to the subject during the past twelve years. More recently actual dissenters have arisen to challenge the claims made by some of those who would thus supervise our health. The Committee on Public Health has been led to study the subject and publishes a report on page 226 of this issue of the *Journal*. Unanimity of opinion regarding the Committee's conclusion can hardly be expected. The subject, however, is timely.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

JACKSON, HENRY, JR. A.B., M.D. Harvard University Medical School 1919. Assistant Professor of Medicine, Harvard Medical School. Associate Physician, Thorndike Memorial Laboratory, Boston City Hospital. Associate Physician, Collis P. Huntington Memorial Hospital of Harvard University. Address: Thorndike Memorial Laboratory, Boston City Hospital, Boston. Associated with him is

MERRILL, DUDLEY. A.B., Harvard University Medical School 1930. Assistant in Medicine, Harvard Medical School. Assistant Resident, Thorndike Memorial Laboratory, Boston City Hospital. Assistant Visiting Physician, Pondville Hospital, Wrentham, Mass. Address: Thorndike Memorial Laboratory, Boston City Hospital, Boston. And

DUANE, MARION. Blood Technician, Thorndike Memorial Laboratory, Boston City Hospital. Address: Thorndike Memorial Laboratory, Boston City Hospital, Boston. Their subject is "Agranulocytic Angina Associated with the Menstrual Cycle." Page 175.

THOMPSON, W. P. M.A., M.D. Columbia University College of Physicians and Surgeons 1924. Instructor in Medicine, Columbia University. Assistant Physician, Presbyterian Hospital, New York City. His subject is "Observations on the Possible Relation Between Agranulocytosis and Menstruation, with Further Studies on a Case of Cyclic Neutropenia." Page 176. Address: 620 West 168th Street, New York, N. Y.

ADAMS, JOHN D. M.D. University Medical School 1902. F.A.C.S. Instructor in Ortho-

pedic Surgery, Harvard Graduate School of Medicine and Tufts College Medical School. Orthopedic Surgeon-in-Chief, New England Medical Center. Consulting Orthopedic Surgeon at Beverly Hospital, Beverly; Lawrence General Hospital, Lawrence; Jordan Hospital, Plymouth and Melrose Hospital, Melrose. His subject is "Mechanics and Reduction of Displaced Upper Femoral Epiphysis." Page 178. Address: 43 Bay State Road, Boston.

SIDEL, NATHAN. M.D. Harvard University Medical School 1923. Associate in Medicine, Beth Israel Hospital, Boston. Junior Visiting Physician, Boston City Hospital. Instructor in Medicine, Tufts College Medical School. Address: 483 Beacon Street, Boston. Associated with him is

ABRAMS, MAURICE I. A.B., M.D. Harvard University Medical School 1930. Assistant in Medicine, Beth Israel Hospital, Boston, and Tufts College Medical School. Address: 475 Commonwealth Avenue, Boston. Their subject is "Jaundice in Arthritis; Its Analgesic Action." Page 181.

OSGOOD, ROBERT B. A.B., M.D. Harvard University Medical School 1899. F.A.C.S. John B. and Buckminster Brown Professor of Orthopaedic Surgery Emeritus, Harvard. Member of Consulting Board, Massachusetts General Hospital. Consulting Surgeon, Boston Children's Hospital. His subject is "The Theology of Medicine." Page 182. Address: 372 Marlborough Street, Boston.

ROOT, HOWARD F. See page 44, issue of January 4, for record of author. His subject is "The Association of Diabetes and Tuberculosis. IV. Treatment, Prognosis, and Prevention." Page 192.

PECK, MARTIN W. B.S., M.D. Harvard University Medical School 1915. Instructor in Psychiatry, Harvard Medical School. Formerly Chief of Out-Patient Department, Boston Psychopathic Hospital. President, Boston Psychoanalytic Society. His subject is "The Application of Psychoanalytic Concepts to General Psychotherapy." Page 207. Address: 520 Commonwealth Avenue, Boston.

The Massachusetts Medical Society

THE PERIODIC HEALTH EXAMINATION

A COMMUNICATION FROM THE COMMITTEE ON PUBLIC HEALTH

Some eight years ago the Committee on Public Health issued a Handbook for Health Examinations by Physicians[1]. The personnel of the Committee has since changed to such an extent that we may now refer to this Handbook with modesty as an excellent presentation of the technical aspects of the subject. The hopes and doubts which surround its clinical aspects, however, have led us to restudy the problem. The purpose of this communication is to record certain ideas concerning the value of the Periodic Health Examination which seem to have arisen in the minds of many thoughtful physicians during the past decade.

With this in mind a circular letter addressed to the members of the Council of the Massachusetts Medical Society and a few others known to be particularly interested brought fifty-odd replies dealing with all phases of the subject. There are still those of the "stitch-in-time" philosophy who see in the periodic health examination the instrument of an hygienic millennium. On the other hand are those who would consider such a millennium (like Henry Tudor, when asked what he would think of another marriage) as "a remarkable triumph of optimism over experience".

On the whole, but with many qualifying reservations, the physicians replying to our letter declared themselves as believing in the value of periodic health examinations. In several instances, after expressing this orthodox belief, the writer added a sentence such as the following: "Curiously enough, I seem to recall more instances where such examinations failed in the sense that they did not reveal early malignant disease which soon thereafter made itself manifest, than I do instances where such examinations led in symptom-free patients to the discovery of a condition which required operation." A fear of clinics or of State Medicine dominated seven replies. Seven considered the health examination a more or less futile gesture. Six clearly recognized the limitations of our knowledge and ability. Four felt that a more adequate definition or conception of what constitutes a health examination is needed. Four felt that further promotion or "selling" is called for. Two very thoughtful correspondents believed that further promotion would be unwise at this time—basing this belief on present economic conditions. Two thought that clinic facilities should be available to any physician who undertakes health examinations, and two more did not feel it was worth while to compete with the insurance companies and the Life Extension Institute. One stated that health examinations should be available to all, whether or not they were able to pay for them. A list of excerpts from these letters is appended to this communication.

DISCUSSION

When disease is diagnosed in its advanced and perhaps hopeless stages it is an easy matter to look backward and to speculate upon what might have been done—had we only known—but it is speculation at best. It is no easy matter, on the other hand, to look forward and prophesy the future of vague thoracic pain, indigestion or cough. Nor will it always help in such forecasting to spend relatively large amounts of money on x-ray, electrocardio-

graphic or biochemical studies. The wise physician has learned to be cautious about telling any middle-aged person that there is nothing the matter with him. He also knows that many individuals who have been branded with chronic disease outlive their normal life expectancies. He is interested in early diagnosis but he cannot allow himself to be carried away by generalities.

An appreciation of the human constitution—and a respect for it—is essential to all honest attempts to "keep well people well". The environmental pressures which break one person will not affect another. The resistance to these pressures is largely inherited and entirely beyond our control. Our knowledge is insufficient to greatly help us in the analysis of constitutions, but the point should be borne in mind that each individual has his own tendencies—if not his destiny. In this regard a study of family histories is often revealing.

Measurable evidence of the onset of chronic disease may sometimes be secured before symptoms are manifest, but nature usually masks it by adjusting the habits of the body to its decreasing capacities. In middle age, for example, we have ceased to turn handsprings or to throw ourselves into sudden physical exertion on slight provocation. It is only when we try to beat our children on the tennis court or mountain climb that we realize our natural limitations. These natural limitations, however, are evidence of a natural cardiovascular degeneration. If we live long enough these natural degenerations become chronic diseases. When is the healthy person to be so labelled? Each must answer the question for himself. We can do very little about it.

The physician is more embarrassed by unforeseen death than by any other incident in his practice. The "specialist in health examinations" has avoided this reality because he is rarely willing to go whenever and wherever called, or to leave "that fascinating game of piecing together bit by bit a diagnosis built up from trifling and apparently unrelated deviations from the normal". Nevertheless, unforeseen death occurs, and if our set-ups, check-ups and follow-ups cannot prevent it, this fact must be plainly made known to the people who are buying health examinations.

The separation of functional from organic symptoms is a very difficult exercise at times. Yet trivial symptoms and signs provide the earliest possible clues to disease. They have the tremendous advantage of localizing the search and of providing tangible clues to be followed. Those who have a flair for phraseology may call them preclinical signs and symptoms, but until they appear we have no definite ground on which to guard against the future.

When trivial signs and symptoms have appeared the subject becomes a patient—to be thoroughly investigated and dealt with like any other patient. Here would seem to be the logical and legitimate field of the "health examination"—for people who have recently acquired trivial complaints—the little sores and lumps—the trifling indigestions — these can be analyzed or dismissed, with a tangible clue to interest the physician, and with promise of worth-while results to interest the patient. In the absence of such localizing symptoms or signs it would seem wasteful to spend time and money on extensive laboratory or other investigation. The Committee could obtain no data on the usefulness of these expensive maneuvers for well people, and is inclined to consider them of no practical value and a needless expense.

Inasmuch as our fellow men are dying at all ages, we thought it might be helpful to review the causes of death in Massachusetts, in relation to our ability to foresee such death. Figures for the proportionate mortalities at various ages in men and women were kindly furnished by the Department of Adult Hygiene at the State House. These have been cast into the chart forms which are presented herewith—one for men and one for women. The *width* of the band (not its position or direction across the chart) represents the prevalence of each cause at each age. Thus we may see at a glance what eighty per cent of the people may be expected to die of.

For the present let us assume that our subject for health examination comes to us thinking he is free from disease. He has no indigestion, he has no chronic sores, he sleeps well, eats well and has no incapacities of which he is aware. Now let us look at the charts and see what he is apt to die of.

At most ages, in both men and women, there is a 7 or 8 per cent hazard of death by pneumonia. Nothing that we can do or say will much change that. When he gets pneumonia we must act quickly, but until then we can do little more than caution him to take care of upper respiratory infections, especially during their later stages, and especially if he is a fresh air enthusiast.

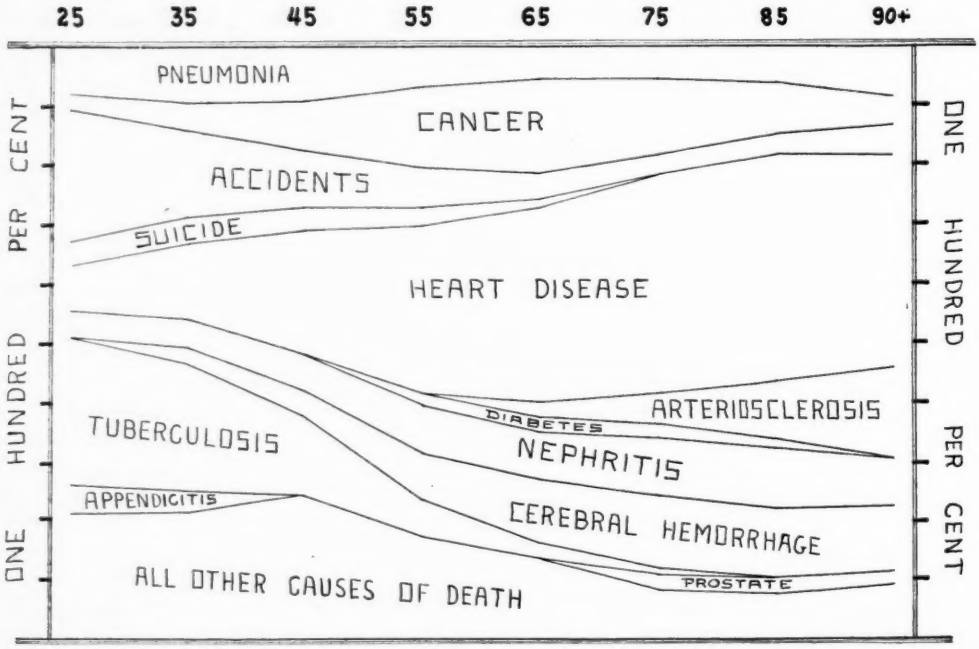
Next comes cancer, one of the most quoted examples of prevention. In spite of the fact that it kills a goodly proportion of men, the Metropolitan Insurance Company did not once encounter it in 16,662 health examinations of its male policyholders[2]. The individual health examiner will therefore not encounter it once in a lifetime! In women this hazard is greater in middle life and a thorough pel-

The Committee has consulted several gynecologists to ascertain what the minimum requirements for pelvic examination should be. Apparently all women not virgins should not only have a bimanual examination, but should also have their cervices inspected about once a year. In the earliest stages of cancer of the cervix there is neither tactile nor visual evidence of pathology. Cancer may nevertheless be specifically ruled out by painting the cervix with Lugol's solution (Schiller's test), which stains the normal glycogen containing epithelium a dark mahogany color. If the entire portion is so stained the test is negative. If there are areas which do not take the stain the test is positive. In the positive cases the precise points for taking tissue for biopsy are indicated, and of the positive cases more than ten per cent prove to be actual cancer. Many of the remaining positives should receive treatment. The outstanding value of the test, however, is that the complete staining reaction is specifically negative.

The Committee believes that any physician undertaking health examinations in women should familiarize himself with this test. For fuller information the following reference is given: The Detection of the Clinically Latent Cancer of the Cervix, Graves, W. P., Surg. Gynec. Obst. LVI, 2A, pp. 317-322, Feb. 15, 1933.

vic examination is one way we can hope to reduce it. (See footnote, page 227.) *A pelvic examination of all women in middle life is therefore called for,* and, with careful palpation of the breasts. That is

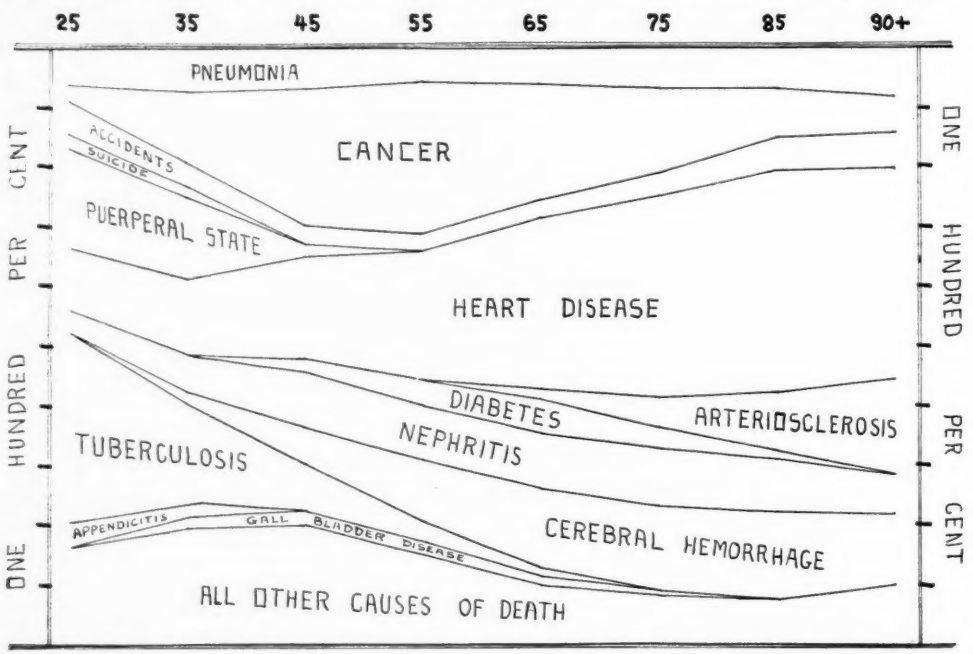
PROPORTIONATE MALE MORTALITY BY AGES IN MASSACHUSETTS, 1930-32.



about all we can do about cancer in this hypothetical person—male or female.

Deaths by accident we can do nothing about. When potential suicides consult us they are not

PROPORTIONATE FEMALE MORTALITY BY AGES IN MASSACHUSETTS, 1930-32.



well people. The puerperal state is not a consideration during a health examination.

We next come to the group of circulatory diseases, including Heart Disease, Arteriosclerosis, Diabetes, Nephritis and Cerebral Hemorrhage. The charts as well as our clinical experience remind us at once that this is a formidable group, increasing as a proportionate cause of death from about 13 per cent at 25 to 70 per cent at 80 years of age. Telling these people to breathe deeply and have a bowel movement every day isn't going to promise much. We may investigate their constitutional patterns but we cannot change them. A few things we can do—*we can keep them from getting overweight; we can examine their urines; we can measure their blood pressures.* What advice we should give to the

borderline cases of hypertension, for example, must remain a matter of the knowledge or philosophy of the individual physician and patient.

Next on the list is tuberculosis. Early diagnosis is all that we can strive for. This means (1) history of contact, (2) tuberculin reaction and (3) x-ray plate. Should these be incorporated into the routine health examination? If the history is positive, yes —if not, no, unless the subject is of the asthenic or hypotensive constitutional type.

The remaining causes of death are so small and diversified that they need not be discussed. We have covered, so far as possible, eighty per cent of all deaths at all ages.

Is the health examination worth while? On this point there is honest difference of opinion. A lecturer, seeking to interest a lay audience, is tempted to be visionary and unequivocal. The lecturer refers his hearers to their family physicians. The physician, seeking to deal with the realities of life, is tempted to be brusque, particularly when he is accosted by a well-known neurasthenic patient. The lecturer will point to the studies of certain Life Insurance Companies, who say there are only about eighty deaths among policyholders who took health examinations for each one hundred deaths among those who did not take them[3]. The physician, being very close to the problems of many people, will point out the distrust in which insurance companies are held by many people. The person who is conscious of having shown physical or chemical abnormalities will naturally shrink from having them confirmed, or in giving any insurance company a chance to obtain data that might rate him up in the event that he should wish to increase his insurance holdings.

Somewhere between the two extreme attitudes is a middle-ground that we may all strive to agree upon, or perhaps many of us could subscribe to the following:

SUMMARY

1. The Periodic Health Examination is a procedure which will occasionally reveal early remedial diseases. It is a luxury, and should be paid for as other luxuries. The Committee believes it is unwise to promote it in any other light or put a price upon it, particularly at this time.

2. Any intimation that it guarantees future health or life is unwarranted.

3. If attempted it should consist of the equivalent of the usual insurance history and examination, plus when indicated:

   a. Blood serum reaction for syphilis.
   b. Pelvic examination in women. (See footnote, page 227.)
   c. X-ray picture of the chest.

4. The examiner should preferably devise and use his own record forms.

5. The examination provides an opportunity to discuss the hygienic habits of the individual and to educate him in the value of investigating any recently acquired trivial signs or symptoms. From this leads our

CONCLUSION

That universal investigation of recently acquired trivial signs and symptoms by the family doctor would be more profitable than the periodic health examination, and that it should be substituted for the periodic health examination in future propaganda.

REFERENCES

1 Garland, J.: A handbook for health examinations by physicians. Boston M. & S. J. 193: 947 (Nov.) 1925.

2 Dublin, L. I.; Fisk, E. L., and Kopf, E. W.: Physical defects as revealed by periodic health examinations. Am. J. M. Sc. CLXX, 4, October, 1925.

3 Fisk, E. L.: Possible extension of the human life cycle. Annals of American Academy of Political and Social Science. CXLV, September, 1929.

EXCERPTS FROM LETTERS ABOUT THE HEALTH EXAMINATION RECEIVED BY THE COMMITTEE ON PUBLIC HEALTH

On the whole, I am in favor of these examinations and believe that their usefulness depends on the skill, conscientiousness and tact of the physician, as is the case with his other professional activities.

In regard to the health examinations, my feeling is that they are potentially of enormous value and actually have been very disappointing.

The critically important thing is I think, for doctors to receive sympathetically those seeking the health examination. Any other attitude is going to drive these people to the quacks.

It seems to me the remedy is really more public education and contact with the private practitioner than any fixed notion of a yearly overhauling.

Health examinations—with the necessary reports and advice—should be looked upon by the general practitioner as a "Major" Medical problem and should be charged for accordingly. In competition is the Life Extension Institute which allows the doctor a fee that is entirely inadequate to thorough and good work.

Doubtless the physician in general is reluctant to insist upon such examinations among his patients for fear they might misjudge his motive as being that of soliciting paid services.

I should favor the Society going on record as to the value of health examinations. Further than that I think it would be futile to go, for you can't go far enough to assure even an approach to universal excellence, in the profession, or universal adoption by the laity.

I do not pretend that I can head off cardiovascular-renal degenerative diseases but I am convinced that intelligent guidance may avoid many discomforts and help them to carry on longer than they otherwise would.

We wish it were possible to sell the idea to more people outside of the introspective group, however the principle is good, therefore we believe should be carried on with as much optimism as possible.

There is merit to periodic health examinations or the matter would have passed as a fad by this time.

Like other health promotion projects the "high pressure" methods to sell it to the public have been tinged with charlatanry. The results have doubtless been beneficial to insurance companies and have also produced other pecuniary benefits, but the medical profession has been placed in the position of pretending to do something which it cannot do.

If he has discomfort or symptoms which lead him to consult a physician of his own accord 'tis well; he may if you please be urged so to do without delay, but it is to be hoped that even then he will fall into the hands of a physician of experience, tact and good judgment, and honest withal.

I feel convinced that at the present time a considerable amount of money is spent on these so-called health examinations for results which are far from satisfactory.

I have seen cases of hopelessly advanced malignant disease of internal organs in patients who had passed a successful health examination within six to twelve months.

The idea has to be "sold" to the people and at the present time I do not think many are in a position to pay more than is absolutely necessary.

Probably it is safe to say that every member of the Council of the Massachusetts Medical Society has reached the "cancer age". How many Councillors do you believe have ever been examined for possible rectal or prostatic (or uterine) cancer in its early stage?

MISCELLANY

A RÉSUMÉ OF THE REPORT OF THE COMMITTEE APPOINTED BY THE NORFOLK DISTRICT MEDICAL SOCIETY

The Committee on Dr. Landesman's Resolutions after two months' work brought in a more or less detailed report comprising twenty pages which was read to the Norfolk District Medical Society at the special meeting in December. The following is a brief résumé of this report:

The Committee visited the principal hospitals and dispensaries of Boston, also the Community Nursing Association and Health Centers. We interviewed a number of the large insurance companies and visited their clinics. We conferred with the Massachusetts Bar Association, the Massachusetts Claim and Investigating Committee, and with Mayor-Elect Mansfield. Our reception was cordial and coöperative wherever we called.

We found that there was a vast amount of charity work being done by the various institutions. The sum total was estimated at approximately a million and a half out-patient treatments per year. It also appears that the Boston City Hospital will take care of about 4000 maternity cases and the Boston Lying-In Hospital approximately 2000.

We found many of the institutions to be greatly overcrowded and taxed beyond their capacity. We found the clinics of the various insurance companies to be treating from 45 to 150 patients per day. The various companies would have the Committee believe that they were willing to coöperate with the physicians provided certain alleged abuses of the physicians by the companies would be corrected.

The Committee believes that the City Hospital is being imposed upon more than any other hospital and believes that the political situation is at the bottom of it.

We find Mayor Mansfield very much interested and willing to coöperate.

The conclusions of the Committee are that a large amount of work is being diverted from the general practitioner by and through these various institutions, and that this source of revenue can be directed back to where it belongs if the proper kind of corrective measures are brought to bear. We are also led to believe that the physicians themselves are greatly to blame for the diversion of a great deal of this business. We believe that the charitable hospitals and dispensaries which are being overcrowded will welcome relief from this situation.

While the insurance companies all assured us of their willingness to coöperate with the physicians, we are convinced that they are primarily interested in saving money for their companies and that it is up to the medical profession to convince them that, by the coöperation which the physicians wish to obtain, they will not only not lose money, but gain by so doing.

The Committee also believes that it is absolutely necessary to get full coöperation and assistance from City Hall through the Mayor's office to eliminate political abuse of the facilities of the City Hospital.

Some of the recommendations from the Committee are as follows:

1. Devise some system which will provide a uniform method whereby the indigent sick may apply for and receive free treatment from various Boston institutions.

2. Procure the coöperation of the Mayor of Boston on rules, regulations, or legislation that will prevent anyone not eligible for free treatment from receiving it through the influence of politics.

3. No person shall be given free treatment in an institution supported by the taxpayers except in absolute emergency, without having first complied with the method which is to be determined under recommendation No. 1.

4. That physicians in general be more careful and more discriminate in their habit of sending patients to charity hospitals for free treatment.

5. All charity hospitals shall provide a large sign stating that "free treatment in this institution is

for the indigent only" until some permanent method is devised which will make this unnecessary.

6. That a Committee be appointed for the purpose of achieving, if possible, changes in the Industrial Act, so that a staff doctor may receive payment for services rendered in cases coming under this act.

7. That a Committee be formed to determine some definite, permanent, and satisfactory method whereby hospitals, doctors, and nurses will be assured of the payment of their bills in tort cases when and if, the claimant receives damages.

8. That the Medical Society instruct the various insurance companies to report any misdeeds or alleged misdeeds of any physician direct to the Society first and from there, if necessary, it can be taken to the State Board of Registration in Medicine.

9. That night pay clinics and baby clinics be abolished.

Respectfully submitted,

CHARLES MALONE, M.D.,
H. M. LANDESMAN, M.D.,
A. J. SHADMAN, M.D., *Chairman.*

AN HONOR CONFERRED ON DR. JOHN W. BARTOL

In the report of the operations of Simmons College for 1932-33, the name of Dr. John W. Bartol appears as chairman of the Corporation.

THE PUBLIC PAYS HALF THE COST OF MOTOR VEHICLE INJURIES

Mr. Dudley Harmon, executive vice-president of the New England Council, has stated in a report on street and highway safety that the public is paying half the bill for motor vehicle injuries in Massachusetts.

This estimate is based on hospital statistics which show that in one year the non-fatal accidents alone imposed hospital charges of more than $2,000,000 and that only about fifty per cent are collectable.

It seems strange that hospitals and physicians have not united in an attempt to lessen this burden.

RECENT DEATHS

SADLER—ROY ANGELO SADLER, M.D., of 1075 Boylston Street, Boston, died January 18, 1934, after a protracted illness.

He was born in Milford, Massachusetts, August 27, 1882, the son of Albert Fiske Sadler and Mrs. Jane Hodges (Blunt) Sadler.

He was educated at Phillips Exeter Academy and Harvard College, and received his degree in medicine from the Harvard Medical School in 1907. He served as house physician at the House of the Good Samaritan, the Massachusetts General Hospital and the Children's Hospital. Later he spent four months in Europe and since then practiced in Boston. He served on the staff of the Boston Dispensary in the children's department and as district physician. During the World War he served at Camp Greenleaf, Georgia, as a first lieutenant of the Medical Corps.

He joined the Massachusetts Medical Society in 1911 and was also a Fellow of the American Medical Association. He was a member of the New England Pediatric Society, the Zetland lodge of Masons, and the Square and Compass Club. He is survived by his widow who was Agnes M. Phelps of Newton.

PAUL—SOCRATES J. PAUL, M.D., died in the Health Department Hospital of Springfield, Massachusetts, January 9, 1934. He was a graduate of Tufts College Medical School and after practicing in Haverhill, Massachusetts, for a time moved to Springfield where he had practiced up to the time of his decease.

He was prominent in Greek circles. He leaves his widow, a son, a daughter, and a brother.

OBITUARIES

ARTHUR LAMBERT CHUTE, M.D.

Dr. Arthur Lambert Chute of 350 Marlborough Street, Boston, died at his home on January 12, 1934, of heart disease. For the preceding six months he had been in poor health. He is survived by his widow, who was Eliza Robinson Swift; a son, Dr. Richard Chute, who is on the staff of the Massachusetts General Hospital; a daughter, Mrs. Samuel McMurtrie, Jr., of New York City, and another son, Oliver Swift Chute of Whitinsville.

Dr. Chute was born in Georgetown, Massachusetts, August 12, 1869, the son of Richard H. and Susan Rebecca (Nelson) Chute. His childhood was spent in Eau Claire, Wisconsin, where his grandfather had entered the lumber business shortly after the Civil War.

He attended Beloit College and after a trip abroad entered the Harvard Medical School, from which he was graduated in 1895. He was a house officer at the Massachusetts General Hospital, and after a few years spent in general surgical practice, he began to specialize in urological surgery. He was one of the first physicians in Boston to become proficient in the use of the cystoscope, and one of the first to confine his work to urology. In 1905 he became a member of the staff of St. Elizabeth's Hospital and served in that capacity until one year ago. Much of his private work was done at the Phillips House, the Corey Hill Hospital and the Brooks Hospital; he was urological consultant to many smaller hospitals. For many years he was associate professor of urology at Tufts College Medical School.

Dr. Chute's contributions to medical literature were many, for he was as industrious in his writing as in his practice. His communications were usually based upon his extensive experience, and were highly regarded because of their sound reasoning

and their excellent style. The esteem in which he was held by his fellows is evidenced by the offices to which he was elected. He had been President of the New England Branch of the American Urological Association, Chairman of the Section of Urology of the American Medical Association, President of the American Urological Association, the American Association of Genito-Urinary Surgeons, the Clinical Association of Genito-Urinary Surgeons, and a member of the Société Internationale d'Urologie. He was a member of the St. Botolph Club, The Country Club, Union Boat Club, the Harvard Club, the Roxbury Clinical and Record Club, the New England Surgical Society, the American College of Surgeons and the Boston Surgical Society.

This is a brief outline of Dr. Chute's career, but the greater part of the story has not been told. Only those who know his work, and the multitude of ill people whom he brought through the valley of the shadow of death, could realize with what devotion he attended to the details of his very large practice. With him, nothing took precedence over the welfare of his patients. His work was characterized by its thoroughness; he was conservative, and his voice was often heard in condemnation of new departures about the wisdom of which he was in doubt. Yet when he became convinced of the value of a new idea, he was quick to apply it in his work. His contributions to medical literature were concerned not so much with new and original suggestions as with standardizing and consolidating advances already made. He was one of the first to appreciate the value of hypodermoclysis in urological surgery, and his early adoption of the two-stage method in prostatectomy enabled him to save many lives which would otherwise have been lost.

His sense of humor was keen; he thoroughly enjoyed his patients and never confined his visits to purely perfunctory contacts. His wisdom, his caution, his rigid adherence to the highest ideals of medicine made him a forceful factor in the development of urology in this country. His geniality endeared him to his fellow physicians and to his patients. His place will be difficult to fill.

JOSHUA C. HUBBARD, M.D.

In the death of Dr. Joshua C. Hubbard this community lost a surgeon of rare character, and extraordinary skill. In spite of his own modest estimate of his attainments, his skill made him a marked man among his fellows, and as a result he was chosen by many of them if they needed an operation on their own families. His character was marked by sincerity and patience. No one ever saw him flustered and embarrassed, no matter how many his annoyances were. He operated skillfully and quickly, and with a minimum of tools. His patients did well. He had special training in obstetrics, and his knowledge and skill in that specialty were great. He was one of the few who combined an obstetric practice with successful work in many fields of general surgery. He was one of the earliest in this part of the country to perfect himself in the operation of blood transfusions, and to perform arteriovenous anastomosis for thrombo-angiitis obliterans. One characteristic that marked him among his fellows was that he never spoke ill of a colleague, and was absolutely free from petty professional jealousy. If nothing good could be said he would refrain from making any expression. In fact he talked very little, and his actions more than his words expressed his character. He was a strikingly handsome man and his outer qualities gave adequate expression to the beauty of his soul.

He was born in Charlestown, N. H., December 31, 1869, the son of Richard and Sarah Denny (Clapp) Hubbard. He was graduated from Harvard College in 1892 and from Harvard Medical School in 1896. During his active professional career, which began in 1897, Dr. Hubbard served for long periods on the surgical staff of the Boston City Hospital, the Leonard Morse Hospital, the Natick, and the Faulkner, the Boston Lying-In and the New England Deaconess Hospitals.

He was also surgeon to the Newton Hospital and consulting surgeon of the Norwood Hospital. Dr. Hubbard was clinical professor of surgery emeritus, of Harvard Medical School, having been on the faculty from 1913 to 1919. He had been a resident of Wayland since his retirement.

His professional standing obtained the recognition of a membership in the American Surgical Association. He was also a member of the New England Surgical Society, the Boston Surgical Society and the American College of Surgeons.

He leaves his widow, the former Marion G. Richardson, and three children, Richard, of Hamilton; Joshua C. Jr., member of the class of 1931 at Harvard and freshman proctor at Hollis Hall during the ensuing two years, and Miss Marion Hubbard of Wayland. A sister, Miss Helen Hubbard, and a brother, Waldo F. Hubbard, both of Charlestown, N. H., also survive him.

As a teacher he was clear, definite, and sound in the principles he taught, and absolutely faithful in giving the students the best there was in him. His contributions to surgical literature were many and valuable. He was greatly interested in local history, and his office was hung with old prints illustrating the history of his city. To the younger men on the staffs of the hospitals with which he was connected and to his consultants he was generous and just.

When some eight years ago he became subject to chronic and gradually increasing infirmities he bore them with patience and without complaint, heavy and disabling though they were, and continued his teaching even after he was unable to do much actual operative work.

His life and character have always been a model and an inspiration to those who knew him. He was an example of what we all ought to strive to

achieve. Great was the benefit of his skill and kindness to his patients, and his character ennobled the profession of which he was a conspicuous ornament.

F. B. L.

NOTICES

AN ADDRESS BY PROFESSOR LEONARD CARMICHAEL

Professor Leonard Carmichael of Brown University will speak at the State Hospital for Mental Diseases, Howard, R. I., on "Development of Behavior Before Birth," illustrated with motion pictures, on Monday, January 29, 1934, at 8:15 P.M.

JACOB KASANIN, M.D., *Clinical Director.*

RADIO HEALTH MESSAGES

JANUARY-FEBRUARY-MARCH, 1934

Sponsorship: Public Education Committee of the Massachusetts Medical Society and Massachusetts Department of Public Health.

Courtesy WBZ. Fridays, 4:30 P.M.

Jan.
26 **The Common Cold**

Feb.
2 **What A Parent Should Know About Measles**
9 **Milk**
16 **Stomach Trouble**
23 **Lumps in the Neck**

March
2 **Age and Cancer**
9 **Some Problems of Epilepsy**
16 **Fractures**
23 **How to Keep the Well Child Well**
30 **Résumé of the Year's Work**

EDITORIAL NOTE: Attention has been called to a change in the program by the National Broadcasting Co. of which we had no notice.

The broadcast message for January 19 was cancelled.

The remaining schedule will be carried out, we are assured, and the subject of Hypertension will be dealt with later.

HEALTH QUESTION BOX

Sponsored by Massachusetts Department of Public Health. Fridays 4:40 P.M.

RADIO HEALTH FORUM

Queries from the public are answered under the sponsorship of the Department of Public Health.

Courtesy WEEI. Fridays, 5:00 P.M.

Questions on Health and Prevention of Disease may be sent to: Radio Health Forum, State Department of Public Health, State House, Boston.

SPECIAL

From Friday, January 19, the State House Broadcasts were discontinued and in their place were substituted Ten Minute Health Reviews.

Sponsored by the Massachusetts Department of Public Health. Assisted by Miss Violette Babcock, Violinist, and Mr. G. Lambert Roscoe, Pianist and Organist.

Courtesy WEEI. Fridays, 1:15 P.M.

Glimpses into the History of Public Health in Massachusetts together with the Functions and Activities of the Massachusetts Department of Public Health, Blended with Classical Music.

After hearing this new program we would appreciate your comments.

NOTICES OF MEETINGS

NORFOLK DISTRICT MEDICAL SOCIETY

A regular meeting of the Norfolk District Medical Society will be held in the Roxbury Masonic Temple, January 30, at 8:15 P.M. Telephone Garrison 9492.

Business.
Communications.
"Certain Disorders of the White Blood Cells."
"The Aetiology of Anemia."
Dr. William Dameshek—Dr. M. B. Strauss.
Collation.

FRANK S. CRUICKSHANK, M.D., *Secretary.*
1695 Beacon Street, Brookline.

NEW ENGLAND HOSPITAL FOR WOMEN AND CHILDREN

The regular clinical conference of the New England Hospital for Women and Children will be held at the hospital, Dimock Street, Roxbury, in conjunction with the staff meeting on Thursday, February 1, at 7:30 P.M. The following cases will be presented and discussed: Two Cases of Congenital Heart Anomaly in New Born Infants; Cancer of the Breast with Lung and Bone Metastases.

ALICE H. BIGELOW, M.D., *Secretary.*

NEW ENGLAND DERMATOLOGICAL SOCIETY

The next meeting of the New England Dermatological Society will be held on Wednesday, February 14, at 3 P.M., at the Massachusetts General Hospital.

J. HARPER BLAISDELL, *Secretary.*

HAMPDEN DISTRICT MEDICAL SOCIETY

The regular Winter Meeting of the Society will be held in the rooms of the Springfield Academy of Medicine, 20 Maple Street, Springfield, on Tuesday, January 30, at 4:15 P.M.

PROGRAM

The Aschheim-Zondek Test in Pregnancy. Dr. George L. Schadt.

Fainting Due to Cardiovascular Causes. Dr. Soma Weiss of Boston.

Discussion by Fellows.

Dinner at 6 P.M. at expense of Society.

HERVEY L. SMITH, M.D., *Secretary.*

GREATER BOSTON MEDICAL SOCIETY

TENTATIVE PROGRAM FOR POSTGRADUATE CLINIC DAY

Given by the Greater Boston Medical Society
At the Beth Israel Hospital, Boston
February 14, 1934

8-11 A.M.—Surgical Operations, Operating Floor.
9-10:30—Surgical Ward Rounds, Floors 4B, 5D.
9-12 — Clinical Demonstrations: Medical Research Division, Pathological Laboratory, Blood Laboratory; Special Clinics; Gastro-Intestinal, Nephritic, etc.
10:30-12 — Medical Ward Rounds, Floors 4C, 5E. Surgical Dry Clinic, Auditorium.
12:30-1:30 P.M.—Luncheon at Hospital.
1:45-4:30—Short clinical papers by members, auditorium.

COMMITTEE ON ARRANGEMENTS.

THE SOUTHEASTERN SURGICAL CONGRESS

The Southeastern Surgical Congress will hold its fifth annual assembly in Nashville, Tennessee, March 5, 6 and 7. The Andrew Jackson Hotel will be hotel headquarters and the lectures and exhibits will be in the War Memorial Building.

The following doctors will occupy places on the program: Fred H. Albee, New York; W. Wayne Babcock, Philadelphia; S. O. Black, Spartanburg; Vilray P. Blair, St. Louis; Frank K. Boland, Atlanta; J. B. Brown, St. Louis; D. B. Cobb, Goldsboro, N. C.; George W. Crile, Cleveland; T. C. Davison, Atlanta; John F. Erdmann, New York; P. G. Flothow, Seattle; Seale Harris, Birmingham; M. S. Henderson, Rochester, Minn.; Arthur E. Hertzler, Halstead, Kansas; Chevalier Jackson, Philadelphia; Walter C. Jones, Miami; Dean Lewis, Baltimore; Joseph F. McCarthy, New York; C. Jeff Miller, New Orleans; A. J. Mooney, Statesboro, Ga.; John J. Moorhead, New York; Edward T. Newell, Chattanooga; Fred Rankin, Lexington, Ky.; Paul H. Ringer, Asheville; Stewart Roberts, Atlanta; George H. Semken, New York; Phil C. Schreier, Memphis; Arthur M. Shipley, Baltimore; H. E. Simon, Birmingham; A. O. Singleton, Galveston; J. R. Young, Anderson, S. C.; Waitman F. Zinn, Baltimore.

For information, write Dr. B. T. Beasley, 1019 Doctors Building, Atlanta.

SUFFOLK DISTRICT MEDICAL SOCIETY

The January meeting of the Suffolk District Medical Society will be held in conjunction with the Boston Medical Library and the Trudeau Society on Wednesday, January 31, 1934, at 8:15 P.M., in John Ware Hall, 8 The Fenway.

PROGRAM

"A Present View of Collapse Therapy in Pulmonary Tuberculosis." Willard B. Soper, M.D., Medical Director William Wirt Winchester Hospital, West Haven, Connecticut.

Illustrated by stereopticon.

Informal discussion from the floor will be invited.

JAMES H. MEANS, M.D., *Vice-President*,
GEORGE P. REYNOLDS, M.D., *Secretary*.

HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the Peter Bent Brigham Hospital Amphitheatre (Van Dyke Street entrance), Tuesday evening, January 30, at 8:15 o'clock.

PROGRAM

Presentation of Cases.

"The Advantages to the Harvard School of Public Health of a Distinguished Ancestry." By Reginald Fitz, M.D.

"The Beginnings of Microscopy at Harvard:—The Hollis Gift of a Microscope (1732): Observations by Edward Bromfield Toward 1746." By Frederic T. Lewis, M.D.

JOHN HOMANS, M.D., *Secretary*.

FAULKNER HOSPITAL CLINICAL MEETING

The next monthly meeting will be held on Thursday afternoon, February 1, 1934. In addition to the usual pathological conference on the cases which come to autopsy during the month, Dr. James R. Torbert will give a short talk on "The Treatment of Obstetrical Hemorrhage." All members of the profession are invited to attend.

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

COURSE ON MEDICAL BIBLIOGRAPHY

Boston Medical Library
1934

January 30—How to Go about the Investigation of a Medical Subject. Dr. W. C. Quinby.
February 6—The Making of Medical Books. Dr. Henry Viets.
February 13—Incunabula. James F. Ballard.
Tuesdays at 8 P.M.
Boston Medical Library, 8 The Fenway.

January 25—Massachusetts Central Health Council will meet at Whittier Health Unit at 4:00 P.M.

January 29—New England Heart Association will meet in the Auditorium of the Beth Israel Hospital at 8:15 P.M.

January 30—Harvard Medical Society. See notice above.

February 1—Faulkner Hospital Clinical Meeting. See notice above.

February 1—New England Hospital for Women and Children. See page 233.

February 7—Annual dinner of the Tufts College Medical School Alumni Association at the Boston City Club, 6:30 P.M.

February 12—House Officers' Association of the Boston City Hospital. Subject: "Forensic Psychiatry". Speakers: Dr. A. Warren Stearns and Dr. Abraham Myerson.

February 14—New England Dermatological Society. See page 233.

February 14—Greater Boston Medical Society. See notice elsewhere on this page.

February 16 and 17—The New England Hospital Association is holding its Twelfth Annual Meeting at the University Club, Boston. For details write Dr. A. G. Engelbach, Massachusetts General Hospital, Boston.

March 5, 6 and 7—The Southeastern Surgical Congress. See notice elsewhere on this page.

April 16-20—The American College of Physicians will hold its Eighteenth Annual Clinical Session in Chicago at the Palmer House. For information write Mr. E. R.

Loveland, Executive Secretary, 133-135 South 36th Street, Philadelphia, Pa.

April 30—The American Board of Dermatology and Syphilology. Examinations for Certificates. Address: Dr. C. Guy Lane, 416 Marlboro Street, Boston, for details.

July 24-31—The IVth International Congress of Radiology will be held in Zurich under the presidency of Professor H. R. Schniz. General Secretary Dr. H. E. Walther, Gloriastrasse 14, Zurich.

September 3-6—American Public Health Association, at Pasadena, California. Dr. J. D. Dunshee, Chairman, Local Committee on Arrangements.

September 4, 5, 6—International Union Against Tuberculosis will be held in Warsaw. For particulars address The National Tuberculosis Association, 450 Seventh Avenue, New York, N. Y.

DISTRICT MEDICAL SOCIETIES

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

February 7—Council Meeting, Boston.

Wednesday, March 7—Lynn Hospital. Clinic 5 P.M. Dinner 7 P.M. Speaker Dr. Frank H. Lahey, Boston. Subject to be announced. Film Electrocardiogram.

Wednesday, April 4—Essex Sanatorium, Middleton. Clinic 5 P.M. Dinner 7 P.M. Speakers: Dr. Elliott P. Joslin and Dr. Howard F. Root, Boston. Subject: "Tuberculosis Complicating Diabetes."

Thursday, May 3—Censors' Meeting, at Salem Hospital, 3:30 P.M.

Tuesday, May 8—Annual Meeting. Salem Country Club, Forrest Street, Peabody. Dinner at 7. Speaker to be announced. Subject to be announced.

RALPH E. STONE, M.D., Secretary.
221 Cabot Street, Beverly, Mass.

FRANKLIN DISTRICT MEDICAL SOCIETY

Meetings will be held on the second Tuesday of March and May at the Weldon Hotel, Greenfield, at 11 A.M.

CHARLES MOLINE, M.D., Secretary.
Sunderland, Mass.

HAMPDEN DISTRICT MEDICAL SOCIETY

January 30—See page 233.

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

Meetings will take place in March (2nd Wednesday) at Wakefield, and May (2nd Wednesday) at Winchester.

ALLAN R. CUNNINGHAM, M.D., Secretary.
76 Church Street, Winchester, Mass.

MIDDLESEX NORTH DISTRICT MEDICAL SOCIETY

Meetings will be held on January 31, and April 25.

T. A. STAMAS, M.D., Secretary.
226 Central Street, Lowell, Mass.

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

February 20—Meeting at the Metropolitan State Hospital, Waltham, 5 P.M.

NORFOLK DISTRICT MEDICAL SOCIETY

January 30—See page 233.

February 27—Hotel Kenmore, 8:30 P.M. Dr. J. H. Shortell: "Industrial Medicine and Surgery."

March 27—Faulkner Hospital, 8:30 P.M. Dr. Henry H. Faxon and Dr. Edward A. Edwards: Symposium on "Varicose Veins." Discussion by Dr. E. E. O'Neil.

April 17—Hotel Kenmore, 8:30 P.M. Special Business Meeting.

May—Annual Meeting. Time, place and program to be announced.

FRANK S. CRUICKSHANK, M.D., Secretary.
1695 Beacon Street, Brookline, Mass.

NORFOLK SOUTH DISTRICT MEDICAL SOCIETY

February 1—12 noon at Norfolk County Hospital. Stated Meeting. Speaker: Dr. Sara Jordan. Subject: Stomach Ulcers.

March 1—12 noon at Quincy City Hospital. Program by the hospital staff.

April 5—12 noon at Norfolk County Hospital. Speaker: Dr. Elliott P. Joslin. Subject: Diabetes.

May 3—12 noon at Norfolk County Hospital. Annual Meeting. Election of Officers.

N. R. PILLSBURY, M.D., Secretary.
Norfolk County Hospital, South Braintree, Mass.

SUFFOLK DISTRICT MEDICAL SOCIETY

January 31—See page 234.

March 28—Clinical Meeting at the Massachusetts Memorial Hospitals.

April 25—Annual Meeting at the Boston Medical Library. Election of Officers. Scientific Program, titles and speakers to be announced.

The Medical Profession is cordially invited to attend all of these meetings.

JAMES H. MEANS, M.D., Vice-President.
GEORGE P. REYNOLDS, M.D., Secretary,
311 Beacon Street, Boston, Mass.
ALEXANDER S. BEGG, M.D.,
Boston Medical Library.

WORCESTER DISTRICT MEDICAL SOCIETY

All meetings to be held on Wednesdays as follows:

February 14—Dinner and scientific program at the Worcester State Hospital, Worcester, Mass.

March 14—Dinner and scientific program at the Memorial Hospital, Worcester, Mass.

April 11—Open date.

May 9—Annual Meeting. Time and place to be announced later.

ERWIN C. MILLER, M.D., Secretary.
27 Elm Street, Worcester, Mass.

BOOK REVIEWS

If I Have Children. By G. FRANCIS SMITH. Published by Oxford University Press, London. 133 Pages. Price $1.75.

This is a well-written, brief treatise on the care of infants and children, designed for the use of mothers. It is not dissimilar to many other books on the subject. Although short, it contains much sound advice.

Histopathology of the Peripheral and Central Nervous System. By GEORGE B. HASSIN. Published by William Wood and Company, Baltimore. 491 Pages.

This volume on the histopathology of the nervous system gives an accurate and comprehensive picture of the lesions encountered in various diseases of the nervous system. It is somewhat to be regretted that the author did not include gross descriptions of the pathological changes as well, to round out the excellent histopathologic presentation. The descriptions are straightforward and clear. An adequate bibliography is appended to each chapter. The illustrations are clear and well chosen. This volume presents a useful addition to our reference books on neuropathology.

Food, Nutrition and Health. By E. V. MCCOLLUM and J. E. BECKER. Published by authors. Baltimore. 1933. 146 Pages. Price $1.50.

Another and revised edition of Dr. McCollum's small book on nutrition is a welcome addition to the subject. In it the authors set forth in simple terms the nature of an adequate diet in relation to its use in daily life, as the biochemist understands it. They also describe the dietary properties of common foodstuffs, point out the effects of malnutrition, and in the final chapter, recommend principles of nutrition

to promote health. Also in this section, foods to consume at meals in winter, spring, summer, and autumn are described; and abbreviated tables of the distribution of the vitamins and acid and alkaline foods enhance the value of the work. The book is valuable for the laity, dietitians, and students of nutrition.

Opothérapie Endocrinienne. By GUY LAROCHE. Published by Masson et Cie, Paris. Second Edition. Price 48 fr.

This book, dealing with endocrine therapy, is a valuable contribution to the field. The subject matter is arranged in orderly fashion. The first two chapters deal with a general survey of the field and discussion of endocrine products. Then in order follow chapters on the thyroid, parathyroids, thymus, suprarenals, pituitary, testicles, ovaries, pancreas, and liver. The last chapter deals with pluriglandular syndromes.

The arrangement of each chapter is excellent. The physiology of the gland and the physiologic basis of therapy are discussed first; then follow discussions of the clinical syndromes of over- and underfunction, and finally the indications and results of therapy. The opinions, often somewhat fantastical, of continental writers are given freely. In general, those statements representing the opinion of the author are conservative and cautious, and often the reasons for any given type of treatment are given at length.

A few minor errors, such as the wrong structural formulas for epinephrine and ephedrine, are of little consequence.

The author concerns himself, for the most part, with the work and opinions of French and German authors. To the American student, therefore, who is familiar with the work of Cushing, Evans, etc., and wants a survey of continental beliefs, the book is especially valuable.

1933 Year Book of Radiology. Diagnosis edited by Charles A. Waters, and Therapeutics edited by Ira I. Kaplan. Published by The Year Book Publishers, Inc. 804 Pages.

The first Year Book of Radiology was received with many enthusiastic comments, but there was no assurance that a second edition would follow. Indeed, it was feared that the cost of publication of such a book which is necessarily filled with expensive cuts and reproductions would discourage further editions.

This second edition, however, is at hand and shows no evidence of either reduction in cost or quality. The section on diagnosis edited by Dr. Charles A. Waters of Johns Hopkins University has gained one hundred pages in volume and the editor has intentionally selected those articles which are most adequately illustrated. Since this admirable work is prepared primarily for those who are not in contact with the large libraries and those who are not so fortunate as to view a large number of radiographs each year, it is quite necessary that the abstracted article be accompanied by clear and adequate illustrations. Many articles have been omitted which are of considerable value probably because of poor illustration and lack of space. The index is so constructed that one may readily refer to any subject or author included in the book.

The section on Radiotherapeutics edited by Dr. Ira I. Kaplan has increased about fifty pages in volume over that of last year. Abstracts are included which deal with nearly every form of radiation therapy, and one might conceivably use these sections of the two Year Books as textbooks on x-ray and radium therapy.

Surgery of the Stomach and Duodenum. By J. SHELTON HORSLEY, M.D., F.A.C.S., LL.D. Attending Surgeon, St. Elizabeth's Hospital, Richmond, Va. With 136 illustrations. Published by The C. V. Mosby Company, 1933. Price $7.50.

Any publication by Dr. Horsley is worthy of serious consideration because of his reputation as a surgeon. This book is so thorough, and is presented in such clear English, that it could not fail to add to the knowledge of a medical student or an expert surgeon.

The developmental embryology and anatomy are clearly described. Diseases of the stomach and duodenum are written up from a surgical aspect. The preoperative treatment of these diseases is helpfully discussed. Several case histories are extremely interesting. The pictures give such a clear idea of surgical procedure that in some cases one is tempted to neglect the text.

Every once in a while in the book, one runs across statements which especially lead to thought and discussion, as on page 87; Why are so many opportunities for the care of gastric cancer missed? Also, on page 239, where an original method (at least to the writer) of catching duodenal secretions is depicted.

This book is worth keeping in one's library after reading.

International Clinics. Edited by Louis Hamman. Forty-Third Series. 1933. Published by J. B. Lippincott Company, Philadelphia. 316 Pages.

This volume opens with a symposium on diseases of the parathyroid glands by a group of well-known authors. The subject is well summarized as is agranulocytic angina, infectious mononucleosis, pellagra and others too numerous to mention. Certainly this volume is a reflection of current medical subjects of absorbing interest and can be highly recommended. The section on surgery is abbreviated and of minor importance.